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the manners and voice of children, than for the artists of an intellectual and educated society to deliberately imitate the unstudied irregularity and purposeless character of much of the Japanese ornament. Whatever charm might belong to the original will be found to have completely evaporated in the copy; and we hope the young architects of our day will not be persuaded to try any such foolish tricks in design.

We referred just now to the claims for admiration put forward for the Japanese as delineators of animal life. Within certain limits these claims are justifiable enough. In the representation of birds in particular, which are their favourite objects, we find, notwithstanding a certain stiffness, that close imitation of minutiæ of outline and action frequently found in the drawings of half-civilised nations, depicting with care and exactitude exactly what they see before them. In the treatment of quadrupeds they are, as far as we have observed, less successful, the difficulties of drawing and foreshortening being greater here. But one point which is conceded even by their most enthusiastic admirers is, that the Japanese never have shown the ability to introduce the human figure with success, or with artistic power in their works. This was admitted at the lecture at the Architectural Association before referred to; but the real significance and importance of this deficiency does not seem to have occurred either to the lecturer or his audience. The fact is, that the human figure is the one object in nature in regard to which mechanical copying will effect little or nothing for art, in which we demand not merely a correct representation of the physical characteristics of the species, but the representation of thought and feeling, and mental character through the medium of form; and this is just what a half-educated and infantile people never have arrived at, and never can. In every marked period of art, the degree of power shown in the representation of the human figure and of human character as exhibited through its medium, is almost the exact measure of the intellectual power of the artists and of the intellectual value of their productions; and the want of this power is always the mark of a barbaric, or semi-barbaric, art. Without this, a national art may exhibit ingenuity, patience, dexterity of hand, and correctness of eye, and even a very refined feeling for colour; but it will never answer fully the demands of educated minds, nor bestow the highest class of enjoyment which such minds are capable of deriving from art. We have been for some time confirmed in our convictions as to this distinction by the observation that among those amateurs and collectors who make the greatest display of this exaggerated fancy for some particular branch of ornamental art, the majority appear to have no faculty for comprehending the works of the greatest masters of art, and trouble themselves very little about them. We remember hearing of one of these ornament-fanciers one day observing condescendingly, in response to some observation as to the beauty of Flaxman's designs—"Yes, I believe he was *very clever*." Any comment would spoil this; but we could multiply instances of similar Bœotianism.

On the whole, then, we conclude that while there is in Japanese art a feeling for colour, a delicacy of manipulation and finish, and a peculiar *naïve* charm and freedom in ornamental design, rendering its productions objects of great beauty and interest, and in some respects highly suggestive and instructive; on the other hand, it exhibits, though in a more refined form than usual, all the characteristics of what may be rightly termed a semi-barbaric art, and possesses little or nothing of what can be called, in the highest sense, intellectual interest. The now celebrated miniature cabinets, with their odd and interesting variety of ornament incrusting the whole without any apparent rule, except that of elaborating every part of the surface available for ornament as highly as possible, show, with all their delicacy and minuteness, little thought on the part of the designer in proportion to the amount of work displayed; for real thought, in ornamental design, is evinced not in crowding every part of an object indiscriminately with ornament, but in the faculty of judging where to ornament and where to stop; what part to emphasise, and what to leave as a foil to the rest. And this want of intellectual interest is rendered more marked by the absence or total failure of delineations of the human figure, without which the highest and most intellectual feelings cannot find voice in art. The Japanese art, in short, is one in which ingenuity, patience, and (in general) good taste take the place of that great power in art which we call *genius*. It is an art for the pleasure of the eye, and not of the mind; and, whatever, its real beauties, such an art ought never to be slavishly worshipped by those whose higher education and civilisation should fit them to appreciate higher things.* In regard to those articles which are becoming the staple object with "collectors," it may be said "they that buy them are like unto them;" for nothing has a greater tendency to weaken and deaden the appreciation of the more intellectual productions of art than the indulgence of this kind of forced taste for an imperfect or restricted form of art. In this view, the whole philosophy of the subject might be summed up in the words from one of the finest sonnets of Drummond:—

> "Of this fair volume which we World do name,
> If we the sheets and leaves could turn with care
> Of him who it corrects, and did it frame,
> We clear might read the art and wisdom rare.
> * * * * * *
> But silly we, like foolish children, rest
> Well pleased with colour'd vellum, leaves of gold,
> Fair dangling ribbands, leaving what is best;
> On the great writer's sense ne'er taking hold.
>
> Or if by chance we stay our minds on aught,
> It is some picture on the margin wrought."

Which thing is an allegory.

THE PROGRESS OF SANITARY LEGISLATION.

The Public Health Bill, of which we recently gave an analysis,† is founded on the second Report of the Sanitary Commissioners presented to both Houses of Parliament by command of her Majesty. This document was printed in 1871, and bears the mark C. 281; but, extraordinary as it may seem, is not dated. We propose to give some further attention to this Report; to inquire how far the Bill now before Parliament does, or does not, carry out its recommendations; and, in so doing, to take a general survey of the present state of this most important subject.

It is now, perhaps, for the first time in the history of this country, that it has been proposed to introduce into our law an entirely new branch, the necessity for which has been ascertained, and the object of which has been formulated, on scientific grounds. While an attempt of this nature is, in itself, a great stride in the progress of civilisation, it is the more necessary to guard against any avoidable complication, and to take care that, in the inception of a new code, no false steps are made. Pressing, as the subject is, it is one in which haste is not necessarily coincident with good speed. It is the more needful to examine where the bounds of the new laws should be drawn, because in this, as in all comprehensive questions, there is a wide margin of debatable ground. It does not follow, because certain points bear more or less directly on public health, that they are, for that reason, to be removed from the province of police or of criminal law, and handed over to the operation of a new machinery, destined, in its original organisation, for the discharge of another class of duties.

Legislative protection against dangerous nuisances is not, however, altogether new in this country, although the general review of matters affecting the public health cannot yet be said to be at all complete. So early as the twelfth year of Richard II., A.D. 1388, an Act was passed, imposing the heavy penalty of 20*l*. on persons who cast animal filth or refuse into rivers and ditches. In 1489 an Act was passed prohibiting the slaughtering of cattle within cities and boroughs. The common law, and the Sheriffs' tourn and Courts Leet, took cognizance of unhealthy nuisances; and in 1552, and again in 1558, the father of William Shakspeare was fined for depositing filth in the public street of Stratford-on-Avon, and for not keeping his gutter clean.

In the reign of Henry VIII., the Statute of Sewers was passed, authorising the issue of commissions to superintend the cleansing of rivers and streams, and the maintenance of dykes and sea walls in specified districts. From the reign of George II., the more populous and wealthy towns have applied to Parliament for special local Acts for paving, lighting, cleansing, and improving their districts. But it was the alarm caused by the ravages of the Asiatic cholera, in 1831, that led to the first move in sanitary reform. In 1832, the powers already exercised by the Privy Council under the Quarantine Act of 1825 were extended. In 1833 a new Lighting and Watching Act imposed penalties for the contaminations of streams by gas. In 1835 the Municipal Corporations Act was passed, a schedule to which enumerates nearly 200 local Acts, which had been passed at that date. Powers of making bye-laws for local government, and for the prevention and suppression of nuisances, were conferred by this Act on certain municipalities.

In 1836 a most important step was taken by the appointment of a Registrar-General of Births, Deaths, and Marriages. Sanitary information was now, for the first time, officially collected and abstracted, and the basis for enlightened legislation was thus prepared.

In 1839, attention was called, in consequence of the report of the Registrar-General, to the excessive mortality of towns. A select committee of the House of Commons reported, in 1840, as to the evil of interments in towns, the importance of water supply, the want of open spaces in crowded cities, the necessity of superintendence being exercised over common lodging-houses, and the need of public baths. The appointment of Local Boards of Health and of inspectors was also recommended by the committee.

In 1840 inoculation for small-pox was prohibited; and in 1841 the expenses of vaccination were charged upon the poor-rates. In 1843 a royal commission was appointed to inquire into the causes of prevalent disease, and the best means of improving the public health under the then-existing laws. The evidence before the committee traced, in the cases of fifty towns, the origin of excessive mortality to defective drainage and similar causes. In 1845 the commissioners made a second report, recommending that the Crown should inspect and supervise th[e] sanitary improvement of towns and populo[us] districts, and that the powers and areas of oper[a]tion of local authorities should be enlarge[d]. After two failures the legislation required f[or] accomplishing these purposes was effect[ually] commenced in 1846.

In that year was passed the first of a ser[ies of] Acts of Parliament for the removal of nuis[ances]. Summary jurisdiction was given to justices i[n] sessions, acting on the information of town c[ouncils,] commissioners under local Acts, or B[oards of] Guardians. Nuisances were defin[ed] to [compre]hend filthy and unwholesome dw[ellings], [accumu]lations of offensive m[atter], and the ex[istence of] foul drain[s] or pools. The powers of the Privy Council to make regulations for the prevention of formidable contagion was also extended by this Act, which, however was only to remain in force until the session of 1848.

In 1847 the Towns Improvement Clauses Act, and the Towns Police Clauses Acts, were passed, for the purpose of consolidating the provisions usually inserted in local Acts for public purposes of a sanitary kind. Nine "Clauses Acts" were passed in the year 1845-7. In 1848 was passed the first Public Health Act, which may be regarded as the groundwork of all our sanitary legislation. This measure was designed to affect towns and populous places in England and Wales, not including the metropolis. It was not to come into force in any locality unless on the petition of the ratepayers, or on the initiation of the Board of Health, on the ground of excessive mortality. A General Board of Health, consisting of a president and two members, one of whom was paid, appointed by the Crown, was established. A second paid member was added in 1850 by the Metropolis Interment Act; which imposed additional duties on the Board. This body was to be continued during five years, and was empowered to appoint inspectors. In 1848 was passed, and in the following year was amended, the Nuisances Removal and Diseases Prevention Act, in substitution for the Act of 1846, which was then about to expire. It was on this occasion, for the first time, that legislation of a permanent character was attempted.

In 1849 came the second outbreak of cholera, and the pernicious effects of impure air and

* It is amusing enough to hear, as we did the other day, from a correspondent in Japan, that the people there are taking just now to imitating *our* costumes, the ladies in particular practising all the abominations of chignons, &c., while we in England are manufacturing imitations of their ware. We are afraid it can hardly be said that they are the gainers in this exchange; but if the Japanisers in this country go on as they seem inclined to do, crying up every branch of Japanese art-manufacture as something wonderful, and giving fabulous prices for any small ugly-shaped pot with an enamel pattern over it, it may be hard to say which will prove in the long run the more absurd "craze" of the two.

† See p. 219, *ante*.

water were very fully illustrated by the medical reports of the time. In 1854 occurred a third visitation of the same pestilence; with the result of stimulating the Legislature to unprecedented activity. A comprehensive Act was passed, in 1855, to consolidate the law relating to the removal of nuisances; and a separate Act for the prevention of diseases,—the Legislature not yet having attained sufficient intelligence to regard these two details of supervision as parts of one sanitary code.

In 1854 the Board of Health was reconstituted; and from that date its powers were annually renewed, until 1858, when the Board was allowed to expire, and certain of its powers were vested in the Privy Council. The Local Government Act was passed in the same year. It is to be construed together with the Public Health Act of 1854 as one measure; and this combined law forms the principal sanitary legislation now in force. The Local Government Act was amended in 1861 and in 1863; and further powers were given to local boards by the Sanitary Acts of 1866 and following years. The Act of 1863 restricted the operation of the original measure, declaring it to be inoperative in places having less than 3,000 inhabitants, unless with the approval of the Secretary of State.

In 1860 a Nuisances Removal Amendment Act reconstituted the Guardians as the local authorities, and enabled them to appoint committees for the execution of the Act. A new Amendment to this Act, in 1863, gave powers for the seizure of unwholesome articles of food.

In 1865 the Sewage Utilisation Act, applicable to the whole of the United Kingdom, enabled local councils, improvement commissioners, and vestries, to deal with sewage for economical purposes. It conferred certain specified powers on their bodies, under the title of sewer authorities, and for the first time introduced sanitary measures into rural districts. This Act was amended in 1867.

Sanitary Acts, under that title, were passed in 1866, 1868, 1869, and 1870, which gradually extended the powers of taking precautionary steps with regard to the public health. There are thus now on the Statute-Book no less than fifteen Acts, in concurrent and confused operation. Some of them apply to Scotland, to Ireland, and to London; which have also their peculiar Acts. In upwards of seven hundred districts, councils, commissions, or elected boards, now exercise the powers of the Public Health and Local Government Acts. A comparatively small number of towns are still governed by Local Improvement Acts alone. But there are still many places with very defective sanitary government; and still more with practically none at all, owing to the defective exercise of the powers which the law confers.

The Commission of 1869 have given a summary of the heads under which they consider the legislative protection of public health should range. But their point of view has rather been that of the lawyer than that of the engineer. They have regarded rather the method in which the principles of local government may be developed with reference to sanitary measures, than the absolute physical conditions of the problem set before them. We think that this has led to a less simple and comprehensive result than that at which the civil engineer would naturally arrive. Thus the Commission state that the subjects of local government generally may be separated into two main classes,—those of police, and those of the supply of public requisites, which latter class subdivides itself into ordinary requirements for the general community, and the public provision for those who depend on the support of others. Without stopping to criticise this statement as being in itself erroneous, on the ground that there is a confusion between restrictive measures and measures of supply, and that the latter can only to a very limited extent be matters of local government at all, we cannot but remark that we fail to perceive the natural connexion between police and local government. Police, or the machinery for the prevention of crime, and for the detection of crime when committed, is a highly important branch of criminal law. Where a special ministry of police does not exist, the regular state of this service naturally falls within the province of the executive, and within the department of the Ministry of Justice. The displacement of the old parish constables by an organised force of police, is a consequence of this view of the case; and any attempt to localise the authorities that exercise police functions, and thus to impair the consentaneous action of the detective and protective force throughout the country, would be a great comfort and encouragement to the criminal members of society. For this reason we hold that those measures which, although no doubt affecting the public health indirectly, are not properly matters of sanitary regulation, but of criminal repression, should be as little as possible referred to the action of local authorities. It is hardly possible that any statesman should have contemplated this method of interference, except from the anomalous position of this country in the want of a public prosecutor. Such matters as the adulteration of food, and the supply of unwholesome articles of consumption, are criminal offences. They resemble, in their nature and effect, such offences as the use of false measures and scales, more closely than any other. It is not proposed to remit to the new sanitary authorities the supervision of the weights and measures used by retail tradesmen. No doubt the poor are as much ground by means of short weight and measure as they are by actual adulteration. Between the sale of under-weight loaves, of beer made from improper ingredients, and of meat, fish, and vegetables that have been too long exposed for sale, it is impossible to draw any philosophical distinction. We would facilitate the punishment of all dealing of this kind. We would give every facility to complaints, whether from individual sufferers, or from those who, by their position, as medical men, as guardians, counsellors, vestrymen, or sanitary authorities, or otherwise, become acquainted with any instances of such unprincipled roguery. But we would not complicate the working of the new law, and throw upon those who ought to be its efficient administrators at once the onus and the unpopularity of exercising a supervision over retail trade, which is properly a matter of police.

Removing, then, from the direct charge of the sanitary authorities the responsibility for the inspection of food, which, if exercised by them, would at all events demand a special staff, and a direct association with the machinery of the land, the whole of the sanitary government of the country will classify itself under two heads. These may be called either the duties of inspection, and those of provision, or the medical and the engineering functions of the administrative authority. One item included in the list of subjects drawn up by the Commissioners should be settled once for all,—if, indeed, it be not now so settled. We refer to the provision for the burial of the dead without injury to the living. This is no question of local government, but is a matter of national prosperity, to be determined on broad and simple rules, and requiring none of that constant vigilance as to the removal of the active nuisances chiefly dealt with by sanitary authorities that must be given to sanitary works proper. Again, the registration of death and of sickness is a national necessity, no more devolving on the irregular action of various local authorities than the registration of births and of marriages. Let us see the subject disembarrassed of those matters, which, though connected with the health and welfare of the people, are not, properly speaking, sanitary measures. The field left for our exertions will still be ample. It may not, even then, be perfectly homogeneous. But, if restricted to its medical and its engineering features, and freed from any irregular police action, it will be both intelligible and practical.

Sanitary provision, thus restricted, comprehends the following subjects. First, the supply of wholesome and sufficient water for drinking and domestic purposes. This is a large and a purely engineering question. It contemplates not only the wants of the population of to-day, but those of the continually increasing numbers of the people. It cannot, therefore, be dealt with on merely local, or hand to mouth, considerations. The division of the whole island into watersheds, and the application of the rain falling within their limits to the supply of the district population, must be primarily borne in mind. Intimately connected with this question of the supply of water, are those of prevention of the pollution of streams and rivers, and of the method of dealing with sewage. These two items are, naturally, referred to by the Commission, but we do not find in the Report any indication that the essential connexion between these different branches of the hydraulic survey and distribution of the country has been grasped by the Commissioners. Two other questions, intimately connected with the above, are left unnoticed in the Report. These are, the arrangement of a sound system of irrigation, instead of the wasteful and clumsy mode practised in many of our valleys; and the provision of urban water conduits, that shall be quite unconnected with the sewers. Confining our attention at the moment to the one great engineering question of the water supply, we require means to prevent waste, to look to due and proper fields of collection, to see how the requisite quantity is to be supplied to great towns, how it is then to serve as a carrier of refuse from the houses, and how, while the water follows the great river courses to the sea, we can make the most of it in its passage, and avoid contamination of its channel. The subject is immense. It is not to be dealt with by the simple plan of rendering the pollution of rivers penal two years hence. To attempt to secure sanitary propriety by simply prohibiting the discharge of sewers into rivers, is like attempting to secure the cleanliness of a dwelling-house by stopping up the drains. The matter must be looked in the face, and dealt with on sound engineering principles. It is puerile to throw the onus upon comparatively uninformed and unintelligent local authorities. In every large town, or class of large towns, different conditions exist; affecting, and indeed indicating, the course to be taken as to the proper method of dealing with the sewage. But, so far from this being a reason for leaving every town to settle its own plan, often on its own unassisted notions, it renders it indispensable that a general system should be created, applicable to all different conditions; and that each special system of works should form a harmonious portion of this grand well-considered plan. If this be lost sight of, our efforts at sanitary legislation will only result in sowing pestilence broadcast through the country.

Let any one compare, for instance, the position of such a town as Oldham, the local legislation for which has recently been referred to as exemplary, with that of such a town as Reading; the former lying on the steep and rocky hills, the latter situated on an alluvial basin, hemmed in by the courses of two navigable rivers. The provisions proper in these two cases will be entirely different. Certain dangers will have to be guarded against in one case that are not very pressing in the other. On the other hand, considerable expense will have to be incurred in the lower-lying town in lifting the whole quantity of liquid sewage to a considerable height before it can be allowed to filter by gravitation. The prevention of the irregular dilution of sewage by rain-storm will be much more important in one case than in the other. Again, the course taken by the effluent water, when it escapes from the confines of the sanitary arrangements of the district, will require more careful watching in the case of the more inland town. This is only one illustration, out of hundreds that might be taken, of the supreme importance of a well-ordered engineering plan of dealing with the watershed of the country, under its three great divisions of supply of human need, supply of vegetable nourishment, and use as a carrier in the removal of *excreta*, with the necessary provision that it shall not serve as a conveyor of poison to more seaward places. This is what may be done, if properly taken in hand. It is what must be done, if we would not sow the seeds of a plague more fatal than cholera, or any visitation of modern times. It will involve, necessarily, a large outlay. This outlay will be either a mere frittering away of money in costly failures, which will be the case if the carrying out of the prohibitory provisions of the Bill is merely left to the alarmed parsimony of the local authorities, or it will be the most beneficial expenditure ever yet made in any country,—a public investment than which the value of our railway capital itself will be less important and less productive,—an expenditure that will not only replace itself within a decade, but more than treble the agricultural produce of the country. The future of the country is, in this respect, in the charge of the civil engineer. Let him be consulted at once.

Worthing College.—The boys of this college, through the consideration of the principal for their sports, have been enjoying themselves this winter by skating upon asphalte, he having in the vacation of 1870 put an iron roof over a large area of ground and paved it with Claridge's patent asphalte, which, we are told, answers the purpose admirably, and is in no way injured by the rollers of the skates.

THE ORGANISATION OF EDUCATION, CIVIL, MILITARY, AND NAVAL.

With the exception of the imperfect provision for the education of the masses, which, we trust, will now soon be remedied, there is, perhaps, no other country in the world which possesses such a wealth of scholastic institutions as Great Britain; but these are so disconnected and deficient in any concerted plan of action, that their power is in a great measure frittered away, and thus they fail to exercise that larger and healthier influence which would inevitably be consequent on united action.

Being painfully impressed, several years ago, with this terrible absence of organisation in the educational forces already at our disposal, I ventured to address the following letters to the editors of the *Daily News* and of the *Builder*. These are given in the order in which they appeared. That to yourself, October 31st, 1868, was headed,—

"The Affix 'Master of Arts.'—'Felix Summerly' did good service the other day by directing attention, through the medium of the columns of the *Builder*, to the greater consideration and larger share of time devoted to the study of art in the continental colleges and schools than in England. This opens a question of great moment, a subject requiring thorough ventilation. Is not the affix 'Master of Arts' a delusive sign of a complete education, when it may be, and is commonly, earned by men theoretically and practically unacquainted with the two great arts of painting and music? The classics, it is true, were for many centuries the only studies which kept alive the spirit of art, and therefore gradually assumed a prescriptive and undue importance in the college curriculum, which, in due time, strengthened into an overweening prejudice in their favour difficult to combat. There are, however, signs at the ancient seats of learning of a better temper, and a more gracious bending to the times. The more modern collegiate institutions 'go in' for everything, not only for the classics and the mathematics, but science, chemistry, and medicine,—but even in these there is still small, if any, provision for the two symbols of civilization,—painting and music. This is strange when it has been so long admitted that an improved taste is daily becoming a more crying national need, for the present and future credit of our manufactures; nevertheless, though such an educational reform promises greater mercantile prosperity, a plethora of wealth, the country remains unmoved, to any sensible extent, even by the prospect of the promised golden reward. This immobility after the importance of a change has been long demonstrated is truly English.

When the Schools Commission was pursuing its useful work in 1865, I took advantage of a professional position, to call the attention of one of its body to the disadvantages under which the study of art in our colleges and schools commonly labours, and, whilst urging the importance of the study, and the immediate necessity for some reform in this direction, I stated that the study of art was not merely important as the proper means of educating men to appreciate the beautiful, but in a direct utilitarian point of view,—for that, when drawing is properly taught, it is a most potent means for perfecting the faculty of observing correctly, of looking at things rightly,—of enabling people, in fact, to see properly. How inaccurately people do generally observe what is before, or going on around them, is only fully known to art-teachers and frequenters of the Courts of Justice; and this will continue till the importance of training the two leading senses of sight and hearing be a thoroughly recognised and important object of education. It is not, therefore, a matter of indifference," I urged, "how drawing is taught in public and private schools; whether the students be condemned to *makeshift* in respect to time and place of study; whether the time set apart for it be pinched in between the more favoured claims of Greek and Latin, or carried on in the class-room, the worst lighted and adapted to the purpose. Moreover, the slight consideration it receives is too frequently aggravated by the so-called 'practice of drawing' being nothing more than mere crude water-colour blotching, and that more than half performed by the teacher. For the study of art to fulfil its true educational function, it should beget a habit of exact comparison, and this is only to be induced by experienced teachers conversant with that thorough discipline and training of the eye which is acquired in the art-school proper,—the student commencing his studies from the simpler forms of leaves, fruit, and flowers, and gradually rising, step by step, to grapple with the subtleties of the human form. One great hindrance to the introduction of a better system of studying drawing in schools is doubtless the ignorant satisfaction which parents evince at those wonderful landscape performances, enlivened with impossible rustic figures and dwellings, surrounded with a blaze of impossible foliage. Such performances are unfortunately too often preferred to the dry and less showy but more useful work under a good teacher.

In returning to the subject of the 'footing' on which art ought to stand in our great seminaries of learning, I would ask why it should not be the same as that of the more favoured subjects? Have there not been already sufficient reasons adduced why it should be so placed? An art student, too, ought to have it in his power to pursue his general, simultaneously with his special study, and to take the degrees of B.A. and M.A. The question then which naturally suggests itself to me is this,—whether, as the reorganisation of our educational system must soon become an important consideration, it would not be better that every college should adopt a *leading* speciality. Then we should have a College of the Fine Arts, of Medicine, of Engineering, &c. in which the degrees of B.A. and M.A. could be graduated for as well as the special honours of R.A., M.D., or C.E. The plan would have this advantage, that the greatest talent in each speciality could be concentrated. This would appear to me to be the best mode of combining special with general studies, and one which would not materially disturb our present educational prejudices. Oxford might retain the classics as its specialty, Cambridge the mathematics. The Royal Academy or South Kensington might be transformed into a College of the Fine Arts, the College of Physicians into a great Medical College, and so on."

We will now turn to the letter addressed to the editor of the *Daily News*, December 28th, 1868. This had more immediate reference to the Slade Professorship; but it incidentally touches upon the more general question of the organisation of education:—

"Although I have from time to time advocated the establishment of a Faculty of Fine Arts in each of the principal universities, I have only recently become aware of the existence of the Slade bequest for that purpose, and I think you will agree with me that for the interests of art it would be well if the chief features of this codicil were made more widely known. There is no less a sum than 45,000*l.* bequeathed, free from legacy-duty, by the late Felix Slade, of Walcot-place, Lambeth, to endow, within two years after his decease, three or more professorships in the universities of Oxford and Cambridge, and also in University College, London; moreover, to endow six exhibitions or scholarships for proficiency in fine arts, for students under nineteen years of age. And if, after providing for these several trusts and purposes, there shall be any surplus, it shall be applied for the encouragement, benefit, and advancement of the fine arts in England, and every part of such surplus which shall not be so applied within five years is to fall to the residuary personal estate. I have recently proposed that every college should have a leading speciality, so that a student in any of the liberal arts would be able to matriculate at the same time, and under one roof, for his general and special degrees. There would be, according to this proposal, the College of Fine Arts, the College of Medicine, the College of Engineering, &c. A student would not then have to run hither and thither to pick up an education under difficulties. This proposal, however, is but a compromise, or rather one collateral to that for a Grand Central College, submitted to the Royal Commission in 1851, and which provided that all the means for a general and special education should be concentrated in one locality. A proposal to convert the Royal Academy into a College of Fine Arts would at first sight appear to be an impracticable one, and indeed may be so now; but had the Slade bequest been available before the new buildings at Burlington House were commenced, the Royal Academy might have been justified in considering whether it should not separate its schools from its exhibitions, and carry them on under the roof of University College, whether it could not combine its own with the resources of the bequest. At the College there would be every facility for studying anatomy, chemistry, &c. on the spot. As this conjuncture, however, did not occur, University College cannot hope to make art its dominant speciality; it would be useless to attempt a 'little' rivalry with the Royal Academy and South Kensington. The only course, then, which appears to be left open to the council of the college, is to proportion its intended art department to its place in a comprehensive scheme of general education; and a very important position, I conceive, that should be. So far back as 1865, whilst the Schools Commission was pursuing its useful course, I took occasion to direct the Commissioners' attention to the fact that the study of art was not only important to educate men to appreciate the beautiful, but to train them to observe, to see correctly what is passing before them. How imperfectly,—inaccurately,—people do observe, is only fully known to art-teachers and queen's counsel. Some painters may think that the establishment of the faculty proposed would only tend to swell the numbers of an already overcrowded pursuit; but it should be borne in mind that the college art-classes would at the same time cultivate a taste for and an appreciation of art in students never intending to follow art as a profession. We must reach that point, too, as in countries where art is more widely cultivated than in our own, when the fact must be recognised that all who study art cannot be painters, sculptors, and architects, but that some students must direct their talents to the manufactures. The whole question, however, requires careful consideration before it is perceived how important are the benefits to be derived from a more extended study of art."

But long before writing these letters, and so far back as 1850, I had projected the foundation of a Grand Central College of Art, Literature, and Science, at South Kensington or elsewhere, already referred to, and that the surplus fund of the first International Exhibition should be devoted to the realisation of the project. In projecting this central college, the ruling idea which possessed my mind was this,—that the central college should be the institution to which all other educational establishments in the kingdom should converge, and that every means should be used to enlist the best representatives of every department of inquiry, in either hemisphere, as its professors; and thus to make London the great educational centre of the world. All other scholastic institutions were, according to my conception, to graduate up to this. The pamphlet which contained this first suggestion for a Central Polytechnic College was in the hands of the Royal Commissioners of the Exhibition of 1851.

We are all, I believe, now coming to understand the first and foremost condition of a true system of education, viz., the importance of deciding those subjects which are essential to the development of the manhood,—that knowledge and training which give a man the power of turning himself to good account in whatever *speciality* he may select; which complete him mentally and physically as a man. These subjects are very many fewer than most people are apt to suppose,—and should form the real nucleus of every educational course in the kingdom. There is no practice which requires more repeated condemnation than that of "cramming" too many subjects into the curriculum of general education. I believe that both mental and physical power are weakened by an ignorant persistence in this course; that practical capacity is lowered rather than raised by this too-prevalent educational fashion.

National education, then, may be broadly divided into two important and distinct sections: first, that central or general education which should be accorded to *all*; and, secondly, that special or professional education which should be provided for *some*; and as most men in England are destined for some special work, the organisation of the special or professional section of education becomes a very important subject for consideration.

The nation has of late years got a notion that special or technical education is a very important thing, and has some bearing upon national interests. The country has tortured itself into the utmost confusion on the subject, and is now intent on providing and applying remedies precisely where they are not wanted. Let us consider for a moment that there are two estates of the realm which require this professional, special, or technical education,—viz., the middle and the working classes. Now, for the technical education of the latter, or the working class, there is no country on the whole earth in which this kind of education is so well provided for. The college in which the English workman obtains his special education is, as Charles Burton well observes, "the workshop," * and the workshops of England are unsurpassed. Yet it is precisely in this direction that the public is clamouring for technical education. "It is not here," as the writer just named rightly observes, "that technical education is required," and with the caution, "beware how you interfere with the workshop!" It is the special or professional education of the middle and wealthier classes which urgently needs improvement. The office cannot do for the articled pupil what the shop can do for the apprentice. The professional pupil requires, before or after passing through the office, a wider range of study touching upon his *speciality* than could by any possibility be acquired there. All the professions, therefore, require their own special colleges, as I have previously suggested. This need has recently been felt by some of the professions, and the system has received further extension in proposals for two more special colleges, "the Legal" and "the Naval." The mention of the latter leads me to note that the military and naval education of the country ought to be a part of a comprehensive educational scheme. The following list of special colleges exhibits the extension of the principle in conformity with my own views:—

Theological, Civil Service †Diplomatic, Social, Science, &c.); Fine Arts, Music, Mathematical (Astronomy, Physics, &c.); †Legal, Military, †Naval, Medical, †Engineering, Chemical, Mineralogical, †Zoological (Veterinary, &c.); †Agricultural, †Preceptors, Ancient Literature, Modern ditto, Pharmaceutical, Mercantile (Colonies, &c.), Oriental.

The centre of this system of special colleges would be the Grand Central Polytechnic College of which already referred to: this, if carried out on the scale proposed by me in 1851, would bring all the special colleges under one roof; in that case the special education, of London professionals, would be provided for in one locality. Such an institution, however, might prove too colossal for convenient management, so that I think the central institution should represent the head of the system of special colleges, and that the highest representative of each of the specialities tabulated should occupy a chair in the Central Institution, from which he would have to lecture on his particular subject, at stated times, to any students of the special colleges then assembled. This Central Institution should also have libraries and museums on an extensive scale, and be the centre from which all London diplomas should be dated. Under this arrangement the special colleges for London would exist as separate institutions, conveniently located, and ranged at moderate distances around the central college.

The several kinds of institution necessary for the educational welfare of the country appear to me to be the following:—

The Central College, Special Colleges, Public Schools for the youth of both sexes (established for several degrees of citizens, and to meet difference of means); Private Schools, District Military Schools, ditto Naval ditto, Volunteer Officers' ditto, Working Men's Colleges, School Board Schools.

* "Art: Pictorial and Industrial."

† Special Colleges already existing, or about to be established.

A more equable distribution of collegiate institutions about the kingdom is also very much needed. It is a very great inconvenience and expense to provincials to have to send up and support young men at any one of our few educational centres, and a practice which is not unfrequently fraught with mischief. Every county town of importance ought to have its properly-constituted medical college, where young men intended for that profession might matriculate *pari passu* for their special and general degrees. I very much doubt whether medical schools ought to be attached to hospitals; it would, it appears to me, be a better plan to have properly-located medical colleges, the students being permitted to "walk the hospitals" lying in their own particular district.

The Royal Academy should either be a college of art, or simply a syndicate to confer degrees and appoint the most able masters of the theories of painting, sculpture, and architecture to the art-professorships at the central college. The special college of the fine arts, the schools, and annual exhibitions could then be transferred to other management.

All colleges but the central, let me repeat, should have but one leading subject,—one *speciality*. The misfortune at present appears to me to be this, that every college is trying to make itself as comprehensive as we propose the *central* institution should be, without having the means, the money, or the room, to carry out the ambition of its directory; and, therefore, the attempt only complicates, encumbers, and involves the management.

With respect to the establishment of public schools, I would merely suggest that such should be instituted on a similar plan to those of which the middle class can avail itself, but on a reduced scale of fees, in order to meet the more limited means of the lower middle and upper working classes.

There are two other institutions on my list about which I have something to say, viz.—District Military Schools and Working Men's Colleges. And, first, of the Military Schools,—which I proposed as the basis of the localisation of our military forces in a letter to the editor of the *Pall Mall Gazette*, March, 1867. This was, of course, before those events which have proved "localisation" of such potent advantage. The outline of the scheme which I sent to the *Pall Mall* was afterwards more fully developed in a lecture delivered at the Royal United Service Institution, March 12, 1869, and published in its Transactions for that year.

The chief features of my proposal were, that [illegible] country should be divided into *military* dis[illegible]s. That every district should have its mili[illegible] school graduated to the requirements of [illegible]ths training for commissioned officers, non-co[illegible]issioned officers, and privates. That the [illegible]iting dêpot for the district should be in ma[illegible]. That there should be drill-grounds [illegible]shops for instructing the boys, destined th[illegible]ate soldiers, in employments which would render the army, as much as possible, independent of any non-military artificers. These Military Schools would be special, professional, or technical schools—the workshop in which the soldier would be made. And I believe the establishment of these schools, and the localisation proposed would render our voluntary military system adequate to all our requirements. It was also suggested that Naval Schools on a similar plan should be established on the seaboard.

And now, touching the institution called the Working Men's College. I have no doubt in my own mind that that in Great Ormond-street is destined to be the precursor,—has been, indeed, already,—of many similar institutions throughout the kingdom. Colleges of this kind would fulfil several important and useful functions. They would afford opportunities to workmen and others, having but limited means, to improve and extend their information in their leisure hours. In Ormond-street there are classes for the study of Greek, Latin, history, art, mathematics, physiology, &c., at a very small term-fee. The programme is as extensive as that of the great universities; but it can seldom fall to the lot of working men to be able to take advantage of the entire course: yet it always affords men the opportunity of taking one or two subjects in which they may be specially interested. And now and then, when a man is conscious of possessing superior ability, to educate himself up to the higher mark he has proposed. But that this kind of institution may be of an extended national advantage, I think they must become a part of the Government scheme of education. It can scarcely be expected that many institutions could, as the Ormond-street College, be taught on the voluntary principle, by unremunerated teachers. We have there been bound together by enthusiasm in the cause, and a sincere respect and regard for the Rev. the Principal. It requires great determination, and a rigorously-ordered working life, to be able to give, through the years, regular attendance to duties of this kind. I am therefore inclined to believe that when the merits of this institution, the useful functions which such colleges are calculated to fulfil, come to be better understood, and the establishment of working men's colleges throughout the great towns be contemplated, the voluntary system of teaching will have, if not entirely, to be partially abandoned. The Rev. the Principal was, however, sanguine that it would not. My own notion is that the most feasible and practicable plan for their extension would be by widening the local and provincial art schools of the Science and Art Department to the functions of working men's colleges.

Finally, I should desire to direct attention to the importance of drawing and music in general education,—in that education which is to form the manhood; they are essentially human and humane studies. The study of the arts would cover those dry bones of physical science, to which modern notions in their cold mechanical pride would confine education. The arts are the golden links in education; they are, too, as utilitarian as those studies to which this virtue is most attributed. I have repeatedly touched upon this subject, and will only now recapitulate the strong arguments in favour of their becoming an essential part of general education, of all college and school courses. Drawing and music are the proper exercises of the two most important of our senses, the eye and the ear. We should bear in mind that it is through the senses of seeing and hearing that we chiefly bear witness to what is passing in the world, and those who have the training of these senses only fully know what false witnesses the senses generally are, before they are properly educated. Neither let it be forgotten that it is upon these generally untrained and neglected senses, that character and life are frequently at stake. The desire to obey the command, "Thou shalt not bear false witness," may sometimes be strengthened by being put upon oath, but the truth of evidence cannot be guaranteed by that course. If a witness be an imperfect observer, as the majority of witnesses of course are, in default of proper training, he may, and often does, conscientiously swear to the absolute truth of his erroneous impressions, and he cannot conscientiously do otherwise. In teaching drawing, this moral may be inculcated: "If you misapprehend the truth with regard to the fact, the model immediately before you, and biding your time for deliberate inspection, how can you expect to correctly observe and accurately record the fleeting facts and occurrences of every-day life?" It is not, however, in the witness-box only that trained senses are required, but to appreciate harmony and beauty in nature, to preside watchfully over all kinds of work, and to endow a nation's manufactures with that taste and permanent excellence which will insure their appreciation throughout the civilised world. I am now speaking more immediately of the education of the eye, and I will venture to say that you would find that painters and sculptors could more readily be inducted to any kind of handicraft,—could more readily turn their hands to any kind of work,—than any other class of the community; and why? Not only because these arts require the greatest dexterity of hand, but because painters and sculptors see better. I know that there is as much to be said in behalf of music as an *essential* study, and has been said by musicians who are more competent than I to speak upon that subject.

The thorough organisation of education should be the question of paramount importance with a nation's rulers. It is education which moulds a people for good or evil. Take care of that, and England may rest hopeful and confident in her future. No difficulties should be permitted to stand in the way, nor expense be spared in order to have it the most complete in the world.

W. Cave Thomas.

The Alexandra Palace.—The Alexandra Palace and Park, at Muswell Hill, will shortly be opened to the public. Mr. Gilbert R. Redgrave has been appointed to be the manager, and the building is close upon completion.

EXHIBITION OF DOMESTIC ECONOMY IN PARIS.

An International Exhibition of Domestic Economy will be opened at the Palace of Industry, in the Champs Elysées, Paris, on the 15th of July next, under the auspices of the National Society for the Encouragement of Industrial Workers (*Travailleurs Industriels*). This society has for its object, in its own terms, the honour of labour, by protecting, encouraging, and rewarding it, the raising of the intellectual and moral level of the workman, the facilitating of his independence by means of the Savings Bank, and providing for him in his old age, by other methods than the assistance given by the State.

The exhibition is divided into forty-six classes, composing ten groups, comprising every object that can contribute to the material as well as the moral welfare of the artisan.

We draw the attention of our readers to Groups 3 and 10. Group 3 is devoted to buildings, and contains five classes, which are thus described:—

Class 18. Models and plans of married or single working men, characterised by cheapness, combined with comfort and healthfulness; models of furnished rooms.

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It would be in every way desirable if English architects would give their neighbours the benefit of their studies for the improvement of the dwellings of the working classes. The conditions under which the French and English workmen live are radically dissimilar, it is true; but if no other purpose were served than the opportunity of comparing two entirely different systems, it would be worth the experiment. There are but few architects who have not at some time of their lives exercised their ingenuity upon the production of a cheap and good labourer's cottage, and it would be interesting to see these designs placed side by side with designs for similar objects from other countries.

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ARCHITECTURE IN EDINBURGH.

As the season advances architectural projects are developed and the prospects of the profession brighter; for although at first there seemed a probability of a falling off, building operations appear to be going on as briskly as last year.

Several new churches are projected. The congregation of the Holy Apostolic Church, which meets in a very modest building in Barony-street, have resolved upon erecting a handsome new edifice upon a site at the north-west angle of East London-street, and Broughton-street. Four architects have been invited to send in designs, the successful competitor to be employed in carrying out his design, and the

THE ORGANISATION OF EDUCATION, CIVIL, MILITARY, AND NAVAL.

With the exception of the imperfect provision for the education of the masses, which, we trust, will now soon be remedied, there is, perhaps, no other country in the world which possesses such a wealth of scholastic institutions as Great Britain; but these are so disconnected and deficient in any concerted plan of action, that their power is in a great measure frittered away, and thus they fail to exercise that larger and healthier influence which would inevitably be consequent on united action.

Being painfully impressed, several years ago, with this terrible absence of organisation in the educational forces already at our disposal, I ventured to address the following letters to the editors of the *Daily News* and of the *Builder*. These are given in the order in which they appeared. That to yourself, October 31st, 1868, was headed,—

"The Affix 'Master of Arts.'—'Felix Summerly' did good service the other day by directing attention, through the medium of the columns of the *Builder*, to the greater consideration and larger share of time devoted to the study of art in the continental colleges and schools than in England. This opens a question of great moment, a subject requiring thorough ventilation. Is not the affix 'Master of Arts' a delusive sign of a complete education, when it may be, and is commonly, earned by men theoretically and practically unacquainted with the two great arts of painting and music? The classics, it is true, were for many centuries the only studies which kept alive the spirit of art, and therefore gradually assumed a prescriptive and undue importance in the college curriculum, which, in due time, strengthened into an overweening prejudice in their favour difficult to combat. There are, however, signs at the ancient seats of learning of a better temper, and a more gracious bending to the times. The more modern collegiate institutions 'go in' for everything, not only for the classics and the mathematics, but science, chemistry, and medicine,—but even in these there is still small, if any, provision for the two symbols of civilization,—painting and music. This is strange when it has been so long admitted that an improved taste is daily becoming a more crying national need, for the present and future credit of our manufactures; nevertheless, though such an educational reform promises greater mercantile prosperity, a plethora of wealth, the country remains unmoved, to any sensible extent, even by the prospect of the promised golden reward. This immobility after the importance of a change has been long demonstrated is truly English.

When the Schools Commission was pursuing its useful work in 1865, I took advantage of a professional position, to call the attention of one of its body to the disadvantages under which the study of art in our colleges and schools commonly labours, and, whilst urging the importance of the study, and the immediate necessity for some reform in this direction, I stated that the study of art was not merely important as the proper means of educating men to appreciate the beautiful, but in a direct utilitarian point of view,—for that, when drawing is properly taught, it is a most potent means for perfecting the faculty of observing correctly, of looking at things rightly,—of enabling people, in fact, to see properly. How inaccurately people do generally observe what is before, or going on around them, is only fully known to art-teachers and frequenters of the Courts of Justice; and this will continue till the importance of training the two leading senses of sight and hearing be a thoroughly recognised and important object of education. It is not, therefore, a matter of indifference," I urged, "how drawing is taught in public and private schools; whether the students be condemned to *makeshift* in respect to time and place of study; whether the time set apart for it be pinched in between the more favoured claims of Greek and Latin, or carried on in the class-room, the worst lighted and adapted to the purpose. Moreover, the slight consideration it receives is too frequently aggravated by the so-called 'practice of drawing' being nothing more than mere crude water-colour blotching, and that more than half performed by the teacher. For the study of art to fulfil its true educational function, it should beget a habit of exact comparison, and this is only to be induced by experienced teachers conversant with that thorough discipline and training of the eye which is acquired in the art-school proper,—the student commencing his studies from the simpler forms of leaves, fruit, and flowers, and gradually rising, step by step, to grapple with the subtleties of the human form. One great hindrance to the introduction of a better system of studying drawing in schools is doubtless the ignorant satisfaction which parents evince at those wonderful landscape performances, enlivened with impossible rustic figures and dwellings, surrounded with a blaze of impossible foliage. Such performances are unfortunately too often preferred to the dry and less showy but more useful work under a good teacher.

In returning to the subject of the 'footing' on which art ought to stand in our great seminaries of learning, I would ask why it should not be the same as that of the more favoured subjects? Have there not been already sufficient reasons adduced why it should be so placed? An art student, too, ought to have it in his power to pursue his general, simultaneously with his special study, and to take the degrees of B.A. and M.A. The question then which naturally suggests itself to me is this,—whether, as the reorganisation of our educational system must soon become an important consideration, it would not be better that every college should adopt a *leading* speciality. Then we should have a College of the Fine Arts, of Medicine, of Engineering, &c. in which the degrees of B.A. and M.A. could be graduated for as well as the special honours of R.A., M.D., or C.E. The plan would have this advantage, that the greatest talent in each speciality could be concentrated. This would appear to me to be the best mode of combining special with general studies, and one which would not materially disturb our present educational prejudices. Oxford might retain the classics as its specialty, Cambridge the mathematics. The Royal Academy or South Kensington might be transformed into a College of the Fine Arts, the College of Physicians into a great Medical College, and so on."

We will now turn to the letter addressed to the editor of the *Daily News*, December 28th, 1868. This had more immediate reference to the Slade Professorship; but it incidentally touches upon the more general question of the organisation of education:—

"Although I have from time to time advocated the establishment of a Faculty of Fine Arts in each of the principal universities, I have only recently become aware of the existence of the Slade bequest for that purpose, and I think you will agree with me that for the interests of art it would be well if the chief features of this codicil were made more widely known. There is no less a sum than 45,000*l.* bequeathed, free from legacy-duty, by the late Felix Slade, of Walcot-place, Lambeth, to endow, within two years after his decease, three or more professorships in the universities of Oxford and Cambridge, and also in University College, London; moreover, to endow six exhibitions or scholarships for proficiency in fine arts, for students under nineteen years of age. And if, after providing for these several trusts and purposes, there shall be any surplus, it shall be applied for the encouragement, benefit, and advancement of the fine arts in England, and every part of such surplus which shall not be so applied within five years is to fall to the residuary personal estate. I have recently proposed that every college should have a leading speciality, so that a student in any of the liberal arts would be able to matriculate at the same time, and under one roof, for his general and special degrees. There would be, according to this proposal, the College of Fine Arts, the College of Medicine, the College of Engineering, &c. A student would not then have to run hither and thither to pick up an education under difficulties. This proposal, however, is but a compromise, or rather one collateral to that for a Grand Central College, submitted to the Royal Commission in 1851, and which provided that all the means for a general and special education should be concentrated in one locality. A proposal to convert the Royal Academy into a College of Fine Arts would at first sight appear to be an impracticable one, and indeed may be so now; but had the Slade bequest been available before the new buildings at Burlington House were commenced, the Royal Academy might have been justified in considering whether it should not separate its schools from its exhibitions, and carry them on under the roof of University College, whether it could not combine its own with the resources of the bequest. At the College there would be every facility for studying anatomy, chemistry, &c. on the spot. As this conjuncture, however, did not occur, University College cannot hope to make art its dominant speciality; it would be useless to attempt a 'little' rivalry with the Royal Academy and South Kensington. The only course, then, which appears to be left open to the council of the college, is to proportion its intended art department to its place in a comprehensive scheme of general education; and a very important position, I conceive, that should be. So far back as 1865, whilst the Schools Commission was pursuing its useful course, I took occasion to direct the Commissioners' attention to the fact that the study of art was not only important to educate men to appreciate the beautiful, but to train them to observe, to see correctly what is passing before them. How imperfectly,—inaccurately,—people do observe, is only fully known to art-teachers and queen's counsel. Some painters may think that the establishment of the faculty proposed would only tend to swell the numbers of an already overcrowded pursuit; but it should be borne in mind that the college art-classes would at the same time cultivate a taste for and an appreciation of art in students never intending to follow art as a profession. We must reach that point, too, as in countries where art is more widely cultivated than in our own, when the fact must be recognised that all who study art cannot be painters, sculptors, and architects, but that some students must direct their talents to the manufactures. The whole question, however, requires careful consideration before it is perceived how important are the benefits to be derived from a more extended study of art."

But long before writing these letters, and so far back as 1850, I had projected the foundation of a Grand Central College of Art, Literature, and Science, at South Kensington or elsewhere, already referred to, and that the surplus fund of the first International Exhibition should be devoted to the realisation of the project. In projecting this central college, the ruling idea which possessed my mind was this,—that the central college should be the institution to which all other educational establishments in the kingdom should converge, and that every means should be used to enlist the best representatives of every department of inquiry, in either hemisphere, as its professors; and thus to make London the great educational centre of the world. All other scholastic institutions were, according to my conception, to graduate up to this. The pamphlet which contained this first suggestion for a Central Polytechnic College was in the hands of the Royal Commissioners of the Exhibition of 1851.

We are all, I believe, now coming to understand the first and foremost condition of a true system of education, viz., the importance of deciding those subjects which are essential to the development of the manhood,—that knowledge and training which give a man the power of turning himself to good account in whatever *speciality* he may select; which complete him mentally and physically as a man. These subjects are very many fewer than most people are apt to suppose,—and should form the real nucleus of every educational course in the kingdom. There is no practice which requires more repeated condemnation than that of "cramming" too many subjects into the curriculum of general education. I believe that both mental and physical power are weakened by an ignorant persistence in this course; that practical capacity is lowered rather than raised by this too-prevalent educational fashion.

National education, then, may be broadly divided into two important and distinct sections: first, that central or general education which should be accorded to *all*; and, secondly, that special or professional education which should be provided for *some*; and as most men in England are destined for some special work, the organisation of the special or professional section of education becomes a very important subject for consideration.

The nation has of late years got a notion that special or technical education is a very important thing, and has some bearing upon national interests. The country has tortured itself into the utmost confusion on the subject, and is now intent on providing and applying remedies precisely where they are not wanted. Let us consider for a moment that there are two estates of the realm which require this professional, special, or technical education,—viz., the middle and the working classes. Now, for the technical education of the latter, or the working class, there is no country on the whole earth in which this kind of education is so well provided for. The college in which the English workman obtains his special education is, as Charles Burton well observes, "the workshop," * and the workshops of England are unsurpassed. Yet it is precisely in this direction that the public is clamouring for technical education. "It is not here," as the writer just named rightly observes, "that technical education is required," and with the caution, "beware how you interfere with the workshop!" It is the special or professional education of the middle and wealthier classes which urgently needs improvement. The office cannot do for the articled pupil what the shop can do for the apprentice. The professional pupil requires, before or after passing through the office, a wider range of study touching upon his *speciality* than could by any possibility be acquired there. All the professions, therefore, require their own special colleges, as I have previously suggested. This need has recently been felt by some of the professions, and the system has received further extension in proposals for two more special colleges, "the Legal" and "the Naval." The mention of the latter leads me to note that the military and naval education of the country ought to be a part of a comprehensive educational scheme. The following list of special colleges exhibits the extension of the principle in conformity with my own views:—

Theological, Civil Service (Diplomatic, Social Science, &c.); Fine Arts, Music, Mathematical (Astronomy, Physics, &c.); †Legal, Military, †Naval, Medical, †Engineering, Chemical, Mineralogical, †Zoological (Veterinary, &c.); †Agricultural, †Preceptors, Ancient Literature, Modern ditto, Pharmaceutical, Mercantile (Colonial ditto, Oriental.

The centre of this system of special colleges would be the Grand Central Polytechnic College already referred to: this, if carried out on the scale proposed by me in 1851, would bring all the special colleges under one roof; in that case the special education, of London professionals, would be provided for in one locality. Such an institution, however, might prove too colossal for convenient management, so that I think the central institution should represent the head of the system of special colleges, and that the highest representative of each of the specialities tabulated should occupy a chair in the Central Institution, from which he would have to lecture on his particular subject, at stated times, to any students of the special colleges then assembled. This Central Institution should also have libraries and museums on an extensive scale, and be the centre from which all London diplomas should be dated. Under this arrangement the special colleges for London would exist as separate institutions, conveniently located, and ranged at moderate distances around the central college.

The several kinds of institution necessary for the educational welfare of the country appear to me to be the following:—

The Central College, Special Colleges, Public Schools for the youth of both sexes (established for several degrees of citizens, and to meet difference of means); Private Schools, District Military Schools, ditto Naval ditto, Volunteer Officers' ditto, Working Men's Colleges, School Board Schools.

* "Art; Pictorial and Industrial."

† Special Colleges already existing, or about to be established.

A more equable distribution of collegiate institutions about the kingdom is also very much needed. It is a very great inconvenience and expense to provincials to have to send up and support young men at any one of our few educational centres, and a practice which is not unfrequently fraught with mischief. Every county town of importance ought to have its properly-constituted medical college, where young men intended for that profession might matriculate *pari passu* for their special and general degrees. I very much doubt whether medical schools ought to be attached to hospitals; it would, it appears to me, be a better plan to have properly-located medical colleges, the students being permitted to "walk the hospitals" lying in their own particular district.

The Royal Academy should either be a college of art, or simply a syndicate to confer degrees and appoint the most able masters of the theories of painting, sculpture, and architecture to the art-professorships at the central college. The special college of the fine arts, the schools, and annual exhibitions could then be transferred to other management.

All colleges but the central, let me repeat, should have but one leading subject,—one *speciality*. The misfortune at present appears to me to be this, that every college is trying to make itself as comprehensive as we propose the *central* institution should be, without having the means, the money, or the room, to carry out the ambition of its directory; and, therefore, the attempt only complicates, encumbers, and involves the management.

With respect to the establishment of public schools, I would merely suggest that such should be instituted on a similar plan to those of which the middle class can avail itself, but on a reduced scale of fees, in order to meet the more limited means of the lower middle and upper working classes.

There are two other institutions on my list about which I have something to say, viz.—District Military Schools and Working Men's Colleges. And, first, of the Military Schools,—which I proposed as the basis of the localisation of our military forces in a letter to the editor of the *Pall Mall Gazette*, March, 1867. This was, of course, before those events which have proved "localisation" of such potent advantage. The outline of the scheme which I sent to the *Pall Mall* was afterwards more fully developed in a lecture delivered at the Royal United Service Institution, March 12, 1869, and published in its Transactions for that year.

The chief features of my proposal were, that e country should be divided into *military* dis-cts. That every district should have its mili-y school graduated to the requirements of ths training for commissioned officers, non-missioned officers, and privates. That the iting dêpot for the district should be in mity. That there should be drill-grounds orkshops for instructing the boys, destined ate soldiers, in employments which ould render the army, as much as possible, in-dependent of any non-military artificers. These Military Schools would be special, professional, or technical schools—the workshop in which the soldier would be made. And I believe the establishment of these schools, and the localisation proposed would render our voluntary military system adequate to all our requirements. It was also suggested that Naval Schools on a similar plan should be established on the seaboard.

And now, touching the institution called the ng Men's College. I have no doubt in my nind that that in Great Ormond-street is ed to be the precursor,—has been, indeed, y,—of many similar institutions throughout ingdom. Colleges of this kind would fulfil sev l important and useful functions. They would afford opportunities to workmen and others, having but limited means, to improve and extend their information in their leisure hours. In Ormond-street there are classes for the study of Greek, Latin, history, art, mathematics, physiology, &c., at a very small term-fee. The programme is as extensive as that of the great universities; but it can seldom fall to the lot of working men to be able to take advantage of the entire course: yet it always affords men the opportunity of taking one or two subjects in which they may be specially interested. And now and then, when a man is conscious of possessing superior ability, to educate himself up to the higher mark he has proposed. But that this kind of institution may be of an extended national advantage, I think they must become a part of the Government scheme of education. It can scarcely be expected that many institutions could, as the Ormond-street College, be taught on the voluntary principle, by unremunerated teachers. We have there been bound together by enthusiasm in the cause, and a sincere respect and regard for the Rev. the Principal. It requires great determination, and a rigorously-ordered working life, to be able to give, through the years, regular attendance to duties of this kind. I am therefore inclined to believe that when the merits of this institution, the useful functions which such colleges are calculated to fulfil, come to be better understood, and the establishment of working men's colleges throughout the great towns be contemplated, the voluntary system of teaching will have, if not entirely, to be partially abandoned. The Rev. the Principal was, however, sanguine that it would not. My own notion is that the most feasible and practicable plan for their extension would be by widening the local and provincial art schools of the Science and Art Department to the functions of working men's colleges.

Finally, I should desire to direct attention to the importance of drawing and music in general education,—in that education which is to form the manhood; they are essentially human and humane studies. The study of the arts would cover those dry bones of physical science, to which modern notions in their cold mechanical pride would confine education. The arts are the golden links in education; they are, too, as utilitarian as those studies to which this virtue is most attributed. I have repeatedly touched upon this subject, and will only now recapitulate the strong arguments in favour of their becoming an essential part of general education, of all college and school courses. Drawing and music are the proper exercises of the two most important of our senses, the eye and the ear. We should bear in mind that it is through the senses of seeing and hearing that we chiefly bear witness to what is passing in the world, and those who have the training of these senses only fully know what false witnesses the senses generally are, before they are properly educated. Neither let it be forgotten that it is upon these generally untrained and neglected senses, that character and life are frequently at stake. The desire to obey the command, "Thou shalt not bear false witness," may sometimes be strengthened by being put upon oath, but the truth of evidence cannot be guaranteed by that course. If a witness be an imperfect observer, as the majority of witnesses of course are, in default of proper training, he may, and often does, conscientiously swear to the absolute truth of his erroneous impressions, and he cannot conscientiously do otherwise. In teaching drawing, this moral may be inculcated: "If you misapprehend the truth with regard to the fact, the model immediately before you, and biding your time for deliberate inspection, how can you expect to correctly observe and accurately record the fleeting facts and occurrences of every-day life?" It is not, however, in the witness-box only that trained senses are required, but to appreciate harmony and beauty in nature, to preside watchfully over all kinds of work, and to endow a nation's manufactures with that taste and permanent excellence which will insure their appreciation throughout the civilised world. I am now speaking more immediately of the education of the eye, and I will venture to say that you would find that painters and sculptors could more readily be inducted to any kind of handicraft,—could more readily turn their hands to any kind of work,—than any other class of the community; and why? Not only because these arts require the greatest dexterity of hand, but because painters and sculptors see better. I know that there is as much to be said in behalf of music as an *essential* study, and has been said by musicians who are more competent than I to speak upon that subject.

The thorough organisation of education should be the question of paramount importance with a nation's rulers. It is education which moulds a people for good or evil. Take care of that, and England may rest hopeful and confident in her future. No difficulties should be permitted to stand in the way, nor expense be spared in order to have it the most complete in the world.

W. CAVE THOMAS.

The Alexandra Palace.—The Alexandra Palace and Park, at Muswell Hill, will shortly be opened to the public. Mr. Gilbert R. Redgrave has been appointed to be the manager, and the building is close upon completion.

EXHIBITION OF DOMESTIC ECONOMY IN PARIS.

AN International Exhibition of Domestic Economy will be opened at the Palace of Industry, in the Champs Elysées, Paris, on the 15th of July next, under the auspices of the National Society for the Encouragement of Industrial Workers (*Travailleurs Industriels*). This society has for its object, in its own terms, the honour of labour, by protecting, encouraging, and rewarding it, the raising of the intellectual and moral level of the workman, the facilitating of his independence by means of the Savings Bank, and providing for him in his old age, by other methods than the assistance given by the State.

The exhibition is divided into forty-six classes, composing ten groups, comprising every object that can contribute to the material as well as the moral welfare of the artisan.

We draw the attention of our readers to Groups 3 and 10. Group 3 is devoted to buildings, and contains five classes, which are thus described:—

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It would be in every way desirable if English architects would give their neighbours the benefit of their studies for the improvement of the dwellings of the working classes. The conditions under which the French and English workmen live are radically dissimilar, it is true; but if no other purpose were served than the opportunity of comparing two entirely different systems, it would be worth the experiment. There are but few architects who have not at some time of their lives exercised their ingenuity upon the production of a cheap and good labourer's cottage, and it would be interesting to see these designs placed side by side with designs for similar objects from other countries.

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ARCHITECTURE IN EDINBURGH.

As the season advances architectural projects are developed and the prospects of the profession brighter; for although at first there seemed a probability of a falling off, building operations appear to be going on as briskly as last year.

Several new churches are projected. The congregation of the Holy Apostolic Church, which meets in a very modest building in Barony-street, have resolved upon erecting a handsome new edifice upon a site at the north-west angle of East London-street, and Broughton-street. Four architects have been invited to send in designs, the successful competitor to be employed in carrying out his design, and the

other three to receive a fee of 35*l.* each. The style prescribed is Norman. Provision is to be made for a large double chancel and other features of a ritualistic character. The construction is to be of stone, within and without, and the cost to be between 7,000*l.* and 8,000*l.*, exclusive of fittings, tower, &c., which last-mentioned feature is not to be proceeded with in the mean time, but is to be embodied in the design.

The Rose-street United Presbyterian congregation intend to abandon their present church, and have secured a site at the angle of Palmerston-place and West Maitland-street, whereon it is intended to erect a new church, at a cost of about 8,000*l.*, from the designs of Mr. Dick Peddie.

A limited competition has been invited for a new Free church at Morningside, to supersede the present building,—a specimen of the "Batty Langley" style; and an additional United Presbyterian church is projected in London-road, to the eastward of Brunton-place.

A movement is on foot to establish a new club, upon a site in one of the streets leading off Princes-street; but we learn that it has as yet received only a limited amount of support.

In domestic street architecture nothing remarkable is on foot in the new town, except the opening up of new ground upon the Drumsheugh estate, where first-class mansions, after the designs of Mr. Dick Peddie, are to be erected. In the old town the practice of keeping up the ancient style is pretty generally adopted. A very picturesque group has been erected at the angle of High-street and Blackfriars-street, one feature of which, a piazza, has been objected to as forming a refuge for idle loungers. As an architectural feature, however, it is quaint and pleasing.

The old Darian House in Bristo-street has been erased, and an imposing and characteristic block of shops and dwellings has been erected on its site. The architect, Mr. R. Thornton Shiells, has caused a panel to be inserted, giving the date of the erection and destruction of the old house; and in another part of the same block a similar panel commemorates the fact that here stood a bastion of the ancient city wall. Mr. Shiells has also prepared designs in the old Scottish style for another block in course of erection in Forrest-road, upon the site of the old city Poor-house; and opposite this another block is being proceeded with from the designs of Mr. J. C. Hay, in rear of which an Odd Fellows' Hall is to be built.

The new street from the Lawn Market to the Bank of Scotland, to be called St. Giles-street, is being pushed forward, and several blocks are being roofed in. Mr. Bryce, who is architect, has been saving in ornamental detail in this instance, and has sought for effect by bold and telling outline.

The two southernmost blocks are five stories in height, gabled and finished at the angles by high pointed towers. Those towards Princes-street have large turrets corbelled out from the angles, which are conspicuous from the distance.

Adjoining this, in Market-street, a new hotel has been erected from the designs of Messrs. Beattie & Son, who have adopted a Flemish type. In outline it harmonises well with the surroundings; but we would have preferred it without the blank windows in the west elevation, which are neither beautiful nor useful, and are quite out of place in a building of this kind.

DRINKING FOUNTAIN, CLIFTON DOWNS.

The Society of Merchant Venturers having munificently granted the enjoyment of the Clifton Downs to the citizens of Bristol for ever, a liberal and much-esteemed citizen, Mr. Alderman Proctor, at his own cost, has erected a drinking fountain to commemorate the event.

The fountain stands on the site of the old turnpike, a most admirable position, as it is approached by four roads, leading respectively from the Hotwells, Durdham Downs, Redlands, and the city, as well as by a pathway from the new zig-zag walk up the cliff. The structure has the novelty of being triangular on plan: thus, effect is obtained for a certain expenditure without making it so massive as would have been the case had it been square. The stone used is the Box ground, with alternate voussoirs to the arches of red Mansfield: the three arches spring from columns the shafts of which are of Rouge Royal marble polished: the basin is red Mansfield with a polished, veined marble curb. Inside the basin stands what may be termed the fountain proper, from which the taps project; this takes the form of the structure, and there is a tap in front of each arch. The under side of the superstructure is groined. Over the arches are gables, with coping and carving under it, and they have each a carved finial. At the three angles there are buttresses, terminating with gablets detached from the pyramidal roof which rises from the centre, and is topped by a handsome finial. In the gables over the three arched openings are circular sunk panels containing the arms of the Merchant Venturers, the arms of the city of Bristol, and those of the donor, Mr. Alderman Proctor, carved in red Mansfield stone, with their several mottoes. Cut in a panel in the base of the fountain is the following inscription:—

"Erected by a citizen of Bristol to record the liberal gift of certain rights over Clifton Down made to the citizens by the Society of Merchant Venturers, under the provisions of the Clifton and Durdham Downs Acts of Parliament, 1861, whereby the enjoyment of these Downs is preserved to the citizens of Bristol for ever."

The fountain stands on three Pennant stone steps: on one side a fourth is added, for the accommodation of children. The steps take a hexagonal form, the lowest being 12 ft. 9 in. through. The whole structure is 25 ft. 6 in. high, to the top of the carved finial. It is surrounded by a plain but substantial iron railing, forming a circle, which is to be laid out with flower beds and gravel paths. In connexion with the fountain there is a cattle-trough not far off, which will be continually supplied with water.

The work has been carried out from the designs of Messrs. G. & Henry Godwin, of London, architects, by Messrs. Broad & Tucker, of Bristol.

The scene on Easter Monday, when the fountain was first made available for the public, was a remarkable one, and showed that the donor has supplied a want. Numbers were waiting their turn all the afternoon, and it was found necessary to obtain half a dozen loose cups, so that the children amongst the excursionists clustered round it might be quickly supplied.

The citizens of Bristol are to be congratulated upon obtaining such a valuable concession on the part of the Society of Merchant Venturers; but they certainly are to be congratulated equally upon having amongst them so generous a fellow-citizen as Mr. Alderman Proctor.

PRIZES FOR STUDENTS.

"A Disgusted Pupil" writes us a letter of two parts, blowing hot and cold. He inquires if certain premiums offered to members of the Architectural Association for designs for the iron roof of a Corn Exchange, have been awarded, and complains, justly, that the very people who call out for inducements to work when such inducements are offered do not take advantage of them. He then goes on to complain of architects that they do not offer a sufficient number of prizes of good amount to induce members of the Association to come forward, and says pupils and assistants are as little cared for as day-labourers. There is more truth in the first part of his letter than the second. There are plenty of medals and premiums offered every year in various quarters to architectural students, but these scarcely call forth so many competitors as might be expected. It is much easier to say, "I wish I could distinguish myself," than to exert the amount of energy and application necessary to effect this. Men must work if they would win, and not be depressed by a failure or two at starting.

TURNER'S "LIBER STUDIORUM."

An important collection of proofs and prints illustrative of Turner's "Liber Studiorum" has been made by the Burlington Fine Arts Club, and is now on view at their house in Savile-row. It includes choice impressions of first states, touched proofs, and unpublished plates, and for the first time shows in its full strength this remarkable work of our remarkable countryman. As all students know, there was no copy of the "Liber" issued containing only early impressions; to obtain such a one several had to be sacrificed. An interesting catalogue has been published for the assistance of visitors. As the writer of it points out, the issue of "Liber Studiorum" began in the year 1807. Its publication was fitful and unbusiness-like. Turner employed no publisher to put forth the work for him; and, so far as we have been able to ascertain, there is no trace of any prospectus or advertisement intended to recommend the work to the public. Five plates were issued together in a part, and it is supposed that the work, according to the original plan, should have extended to twenty such parts,—that is, one hundred plates. The first four were issued under an arrangement with Mr. Charles Turner, the engraver, according to which he was to engrave all the plates. On all but a few of the earliest of these his name appears as publisher, as well as engraver, and it has been suggested that the original design of the work was partly due to him. Rather a hard bargain is said to have been struck by the painter with his namesake for the performance of these twofold duties. However that may be, the engagement between them terminated not very amicably after the appearance of twenty plates, and thenceforward Turner, the painter, became his own publisher, arranged the work himself, and sold the copies at his own house. Each part contained five plates. They were stitched together in a blue-grey cover, with a badly-printed title. The price asked for the first numbers was, prints, 15s.; proofs, 1*l.* 5s.; "to be paid for on delivery;" but it was afterwards raised to, prints, 1*l.* 1s.; proofs, 2*l.* 2s.

We can remember a visit to the artist's house, backed with a letter of introduction, for the purpose of purchasing a copy. "Have you got the money with you?" The money was produced. "Go up and get a copy" (addressing his dirty old servant), "and mind, take the top one: I'll have no picking." However, let this pass: the recollection is not an agreeable one. The subjects treated in the "Liber Studiorum" are very varied, and show the range of the artist's power. For the full appreciation of the work an education is necessary, and this exhibition will afford it.

SCHOOL-BOARDS.

Chesterfield.—The report of Messrs. Smith & Haslehurst having been given to the Board, it was resolved that the plans for the new schools in Hepper-street and St. Helen's-street, which bore the motto of "*Simplex Munditiis*," be adopted. Upon looking at the letter accompanying the plans, the architect was found to be Mr. S. Rollinson, of Chesterfield. It was then resolved that the clerk apply to Mr. Rollinson for all information in respect of the building, to be placed before the Education Department, previously to the amount required being borrowed for the building of the schools.

Eckington.—It has been resolved "That M[illegible] Robson, consulting architect of the Lond[illegible] School Board, be appointed architect to [illegible] Board."

Bradford.—At the last meeting of the B[illegible] two letters were read from the Educat[illegible] Department, enclosing one from Alderman [illegible]herd, who had called the attention of the [illegible]ment to what he considered the extrav[illegible] expenditure of the Board. The letters also gav[illegible] the substance of the report of their lordships' [illegible] architect upon the proposed schools at Fever[illegible]sham-street, Bowling Back-lane, and Ryan-street, which he regarded as too expensive in character. It was further pointed out that these schools would almost cover the entire deficiency which the inspector had reported to exist in the borough, so that the accommodation in them would appear to be excessive, especially as the Board contemplated the erection of fou[illegible] additional schools in other districts. These [illegible]munications were referred to the committ[illegible] the Board. The Mayor, as chairman of the [illegible] then made a statement showing that the exp[illegible]ture in providing schools for 5,000 childre[illegible] a total cost of 100,000*l.*, would, if the money [illegible]ere borrowed from the Public Works Loan Commissioners at 3½ per cent., be simply covered by a rate of 3d. in the pound. Alderman Mitchell afterwards brought on his motion for appointing a committee to inquire into the cost of the proposed schools and sites for schools, with a view to the diminution of the expenditure on each or all of them. He estimated that if the Board carried out their present scheme in regard to these schools, the total cost would be at the rate of 18*l.* 6s. 10d. for every child accommodated, and quoted figures to show that in other towns School Board schools were being erected at a much less cost. The motion gave rise to a debate, and was ultimately defeated by nine votes against five.

Ipswich.—In consequence of the advertisements which appeared for plans of school buildings, several architects in the town pointed out

that sufficient time had not been allowed to get out the plans, and that there was an apparent want of harmony between the ground plan referred to in the advertisement and the rules and regulations defined by the Committee of Council on Education. As to the first point, the clerk to the Board stated at their last meeting that, under the direction of the vice-chairman, he wrote to the architects informing them that they might calculate upon having an extension of time; and as to the second matter it was pointed out to him that the scale for the breadth of the rooms was fixed at 20 ft. in the rules and regulations for building schools, and that this scale was binding. He had an interview with Mr. Westhorp, and with the inspector, Mr. Alington, and, as a result, he wrote to the Department asking if, in building the schools required, the Board were necessarily limited to the breadth of 20 ft. He received the following reply:—"The breadth of the schoolrooms need not be strictly confined to 20 ft., but all experience shows that narrow rooms fitted with groups of desks and benches along only one side of the room are far more convenient for school purposes than the wider rooms fitted with groups against the opposite sides. Moreover, the narrow rooms are readily partitioned off into class-rooms if necessary, which cannot be done in the case of the wider rooms without considerable expense. In the opinion of their Lordships, the Board would do well to re-consider the arrangement of the plan herewith returned." A long discussion ensued as to what should be the action of the Board in reference to the matter. An opinion was expressed that it would be a great mistake for the Board to confine their large rooms to 20 ft., seeing there could be no possible objection to the room of the size fixed upon in the ground plan, which had been approved of by this Board. But it was pointed out that the breadth of 20 ft. was a general instruction, and that if the Board departed from the instructions which had been laid down, they might afterwards get found fault with by the Government authorities. It was also remarked that this Board could hardly set itself against the experience and strong representation of the Government. Mr. W. Fraser pointed out the advantages which resulted from the school-room being of the size laid down by the Government, and urged the desirability of the Board altering their ground plan. A letter was read from Mr. S. Westhorp (who was unable to be present), expressing his opinion that it would not be wise for the Board to adhere to the plans they had prepared, but to advertise for plans generally, and have the schools only 20 feet wide, as it appeared to him that the department would eventually approve of none other. Eventually a proposition by Mr. Fraser, to the effect that the ground plan approved of at the last meeting should be withdrawn, and that the architects should be apprised thereof, was carried unanimously, on the understanding that the Board should procure information as to whether the school-room, divisible into class-rooms, was of itself sufficient without class-rooms. It was also resolved that the plans should be sent in on the 1st of May.

SOCIETY OF BIBLICAL ARCHÆOLOGY.

AT the meeting on Tuesday, April 2nd, a notice of a "Curious Myth respecting the Birth of Sargina, from the Assyrian Tablets, containing an Account of his Life," by Mr. Henry Fox Talbot, was read. Mr. Talbot showed that Sargina the First was a very ancient king of Babylonia. The date of his reign is uncertain, but it may be roughly estimated at fourteen or fifteen centuries before the Christian era. He was a legislator and a conqueror; and his arms appear to have reached the distant Mediterranean. He fixed his capital at Agani, in Babylonia, a city whose site has not yet been discovered. His history, like that of other ancient conquerors and legislators, has become partially involved in fable. An account of his birth and infancy, preserved on a tablet in the British Museum, offers a great similarity to that of the infancy of Moses, as related in the second chapter of Exodus. For, we read that the mother of Moses "took for him an ark of bulrushes, *and daubed it with slime and with pitch*, and put the child therein: and she laid it in the flags by the river's brink. And Pharaoh's daughter saw the ark among the flags, and she sent her maid to fetch it. And *when she had opened it* she saw the child." All this agrees very closely with the conduct of Sargina's mother as described on the Assyrian tablet. "In a secret place my mother had brought me forth. She placed me in an ark of bulrushes: with bitumen she closed up the door. She threw me into the river, which did not enter into the ark. The river bore me up, and brought me to the dwelling of a kind-hearted fisherman. He saved my life, and brought me up as his own son," &c. The inscription appears to have been a long one, but only a small portion of the beginning has been well preserved.

SINKING SHAFTS THROUGH WATER-BEARING STRATA.

THE INSTITUTION OF CIVIL ENGINEERS.

AT a recent meeting, Mr. Hawksley, president, in the chair, the paper read was "On the Kind-Chaudron System of Sinking Shafts through Water-bearing Strata, without the Use of Pumping Machinery," by Mr. Emerson Bainbridge. Of the total expenditure necessary to open out a coal-field, one of the chief items of cost was caused by the heavy expenses incurred in sinking the shafts, and when such sinking happened to pass through water-bearing strata, the proportion due to this head, of the total cost, was much increased. When a shaft exceeded 200 or 300 yards in depth, and when the water occurred near the surface, it was usual to keep the water back by the insertion of cylindrical metal "tubbing," placed upon a hard bed of rock at a point immediately below the lowest feeder. Where pits were less than 100 or 200 yards in depth, the application of tubbing was not of much service, as the movement and dislocation of the strata, consequent upon the removal of the coal, generally caused the water to find its way into the underground workings. The sinkings in which there was the largest quantity of water had been carried in Belgium through the chalk, and in England through the Permian series; these rocks usually being sufficiently porous to contain large volumes of water. Without exception, in England, all such sinkings had been made by the use of pumping machinery of sufficient power to keep the pit, during the process of sinking, comparatively dry.

It was stated that the question of dealing with wet sinkings in the most economical manner would, before long, become of much greater importance than heretofore. In the report of the Royal Coal Commission an estimate was given of the coal remaining in the British Islands, as follows:—

	Million Tons.
Coal yet remaining which is or will have to be reached by sinkings through the coal measures	90,527
Coal yet remaining which is or will have to be got by sinkings through the Permian and other formations overlying the coal measure	104,418
Total	194,945

The plan of sinking pits hitherto practised in this country consisted in dealing with the water by means of large pumping-engines, in leaving the bottoms of the pits dry enough to allow the sinkers to block the well, and in keeping back the water in the upper strata by metal rings, cast in segments about 4 ft. long, and connected by wooden joints, which were wedged tight, when all the tubbing was fixed. The evils of this system were:—1. The heavy first cost of the plant, when special pumping machinery was used. 2. The expense of the wedging tubs, and the cost of fixing them. 3. The delay caused by the sinkers being compelled to work always in water. 4. The high first cost of the tubbing and of fixing it in the shaft, and the liability of the tubbing leaking in consequence of the numerous joints.

In the application of the Kind-Chaudron system these evils were to a great extent avoided. This system consisted of a combination of Mr. Kind's well-known apparatus for boring wells, with an ingenious device, invented by M. Chaudron, for fixing cylindrical tubbing under water in such a manner as to make it quite secure and water-tight. In the latter part of 1871, the author, accompanied by Mr. W. Cochrane, visited the Maurage pits, near Mons, where two shafts were being sunk by this process. These shafts, though having a depth respectively of 373 ft. and 593 ft. at the date of that visit, had been bored that depth under water with a diameter of 13 ft. 6 in., the water having been constantly standing at a depth of 37 ft. from the surface. The Chaudron system consisted of the following distinct processes:—1. The erection of the machinery on the surface. 2. The boring of the pits to the lowest part of the water-bearing strata. 3. The placing of the tubbing. 4. The introduction of cement behind the tubbing to complete its solidity. 5. The extraction of the water from the pits, and the erection of wedged cribs to secure the moss-box. The machinery on the surface consisted of a capstan engine, which raised the *débris* from the pits, and a vertical engine, by means of which the boring tools were lifted at each stroke; the speed of the latter engine varying from fifteen to eighteen strokes per minute. The first tool applied was the small trepan, which weighed 8 tons and bored a hole 4 ft. 8½ in. in diameter, the depth of the boring being increased at the rate of from 6 ft. to 10 ft. per day. The pit was enlarged by a trepan weighing 16½ tons, which increased the size to 13 ft. 6 in., and was kept from 10 to 30 yards behind the pit made by the smaller trepan. The larger boring-tool had twenty-eight teeth, and the smaller tool fourteen teeth, each tooth weighing 72 lb. The boring by the larger trepan did not progress faster than about 3 ft. per day of twenty-four hours. The boring was generally carried on in the day, the remaining twelve hours being employed in raising the *débris* from the pits. When the bottom of the water-bearing strata was reached, the tubbing, which consisted of metal cylinders cast in complete rings of an internal diameter of 12 ft. and a length of 4 ft. 9 in., was placed in the shaft, the rings of tubbing being connected by bolts. The tubbing was tested by hydraulic apparatus to one-half more pressure than it was expected to be subjected to. The rings of tubbing were let down into the shafts by means of the capstan; the moss-box at the bottom of the tubbing being placed in the pit first. The moss-box consisted of two cylinders, one sliding inside the other, and each having a flange broad enough to form a chamber to hold a quantity of ordinary moss. When the moss-box reached the bed which was prepared for it at the bottom of the pit, the weight of the superincumbent tubbing pressed upon the moss, and formed a water-tight barrier. The tubbing being thus fixed, the annular space between it and the sides of the shaft was filled with cement, thus ensuring the solidity of the tubbing; after this was finished, the standing water in the shaft was drawn out, and the joint below the moss-box was permanently safe, by the fixing of several rings of tubbing resting on two strong wedging cribs.

The comparative cost of sinking by the processes referred to was shown by two tables, one of which exhibited the complete cost of sinking, and the time occupied by the ordinary system, at eighteen different collieries, whilst the other gave the same information for ten collieries put down by M. Chaudron's process. The results showed that, whilst with the system of sinking by the aid of pumping machinery, the average cost per foot had amounted to 114·7*l.*, and the rate of sinking to 8·9 ft. per month, with the Chaudron process the average cost of all the pits was equal to 22·9*l.* per foot, and the speed of sinking to 15·8 ft. per month.

WORKS AT THE EXHIBITION PALACE, DUBLIN.

WE recently gave particulars of progress here. Since then various new works have been determined on. A grotto fountain, consisting of a large central stalactite cavern, and two smaller caverns at the sides, is being constructed at the southern end of the nave. In front of the smaller caverns at the sides will be figures of the Spirits of the Land, standing in ornamental basins carried on light curved and foliated ribs springing from a larger basin of rock-work; into which, after passing through the basins before described, water cast from ornamental jets rising above the figures will be discharged, and will flow through the rock-work of the rim, and over concealed coloured lights. Within the large central cavern there will be Naiads.

The summit of the grotto will be crowned with a figure of Erin, seated on a bank of shamrocks, and a cataract will rush over, and cover the entire of the mouth of the central cavern, and be acted upon by lime-lights and coloured reflectors. The interstices of the rock-work will be filled with ferns, mosses, and drooping foliage, and a flower-slope will be brought down from the rim of the main basin to meet the floor.

Another fountain is in course of erection in the part of the nave opposite the Colonnade,

with reclining figures bearing ornamental lamps. Outside the rim will be a border of ornamental tiles, manufactured by Messrs. Kerr, of the Balleek Pottery Works. Within the rim there will be, at either side of the centre of the basin, a group of four storks. In the centre of the fountain there will be a group rising to a height of about 20 ft. above the floor; and around the base there will be four figures (emblematical of the four provinces of Ireland), each seated on a nautilus, with sails set and extended oars. The group is crowned by a figure of St. Patrick trampling underfoot a toadstool, and banishing the serpents from the soil. The right hand is extended, the left grasps a staff, above which is a cluster of shamrock-leaves, containing large ornamental water-jets.

Two colossal figures of St. Michael are being carved in Portland stone,—one for each of the garden fountains,—and a spacious orchestra is being erected at the north end of the nave.

The Naiads between the central cavern of the grotto fountain will be in Portland stone; the groups in front of the side caverns, and also the colossal figure of Erin, in Sicilian marble. The rim of the fountain front of the colonnade will be in violet vein marble, the stork groups in majolica, the basins in light Bardiglio, the base and serpents in Egyptian green, and the nautilus shells, figures, and foliage generally in natural colours.

The entire of the works are being executed from the designs and under the superintendence of Mr. Walter Emden, architect. The carved work of the grotto fountain and of the garden fountains has been entrusted to Mr. Edward Mitchell, of Crowndale-road, Camden-town. The whole of the ornamental work of the central fountain is being carried out by the Marezzo Marble Company, of Oxford-street, for whom the modelling has been done by Mr. Broomfield, of Kennington-road. The grottoes and rustic work generally are being constructed by Mr. Nadal, a French artist; and the artistic lighting will be by Defries & Sons. The constructive works of foundations and basins have been executed by Mr. Thomas Henley, of Holloway; and the hydraulic engineering is by Messrs. Edmundson, of Capel-street, Dublin. Mr. Beer, of Tennison-street, London, who is well known in connexion with many of the London theatres, is engaged in decorating the concert-hall and dining-room.

CONDITION OF THE HOUSES IN ADELPHI-TERRACE.

At Bow-street, on Tuesday last, Mr. Biron, instructed by Mr. Napier, attended the court with Mr. Hayward, the district surveyor to the Metropolitan Board of Works, by the request of Mr. Vaughan, with reference to an application for an order for ejectment under the Building Act, which he made on Monday, the 25th of March.

The application was made respecting the dangerous state of five or six houses in Adelphi-terrace, and the result was that Mr. Vaughan granted an order for the removal of the inhabitants, one of the houses being the Junior Garrick Club. Afterwards several of the inhabitants, accompanied by Mr. Fladgate, solicitor, waited upon Mr. Vaughan, and in consequence of their assertions that the houses were perfectly safe, Mr. Vaughan suspended the order, and requested Mr. Fladgate to attend on Tuesday, when notice would also be given to the Metropolitan Board of Works.

Mr. Vaughan said there was no case before him upon which he could decide. He suggested that Mr. Fladgate should take out a summons against the Board of Works to show cause why the order should not be cancelled. After some little discussion, this course was adopted, and the summons made returnable at once.

Mr. Fladgate then stated that the houses had been built about a hundred years, and had been somewhat neglected. There were cracks in the walls and basements, but they had not increased during the last ten years. They were sufficient perhaps to frighten the district surveyor, who had only recently seen them, but their true nature did not justify the steps which he had taken to eject at once the inhabitants.

Mr. Robert Driver, of Whitehall, said that he had been surveyor of the Adelphi estate for twenty years. He had recently examined the houses in Adelphi-terrace, and was satisfied of their stability. No. 1a, the Junior Garrick Club, was in the same condition as it had been for the past ten years. There were large cracks, but they had not increased during the past ten or twelve years. There was certainly no danger of the house falling. The same remark applied also to Nos. 1 and 2, except that the latter was the worst. No. 3 was in very good order. No. 4 was not so good, but it was in no danger. Some of the cracks might have got a little larger, but there was no fear for people sleeping there.

Mr. Wm. Scurry, architect and surveyor, deposed that he had received notice to shore up the foundation, and the work was in progress. He had made a careful survey of Adelphi-terrace, and he considered the houses quite secure. The Club was perfectly safe. On being cross-examined, the witness said that one of the piers or supports of the arches under one of the houses needed rebuilding, and he was appointed to see to the repairs. He had shored the place in such a manner that there was no immediate danger of the house above falling.

Mr. Vaughan said the question he had to decide was whether the shoring was sufficient.

The witness replied that he should consider so himself.

Mr. Fladgate said that he had other witnesses, but their evidence was only in corroboration of what had already been said.

Mr. Hayward stated that he considered the houses were in a very dangerous condition, and that the reconstruction of the piers was a very delicate operation. It was exceedingly unsafe for people to remain in the house while the reconstruction was being carried on. He had advised 100 men to work at it on Sunday, on account of the immediate danger.

Mr. George Vulliamy, the superintending architect to the Board, made similar statements.

Mr. Vaughan said he was quite prepared to express his opinion that the order must not be cancelled.

The order for the ejectment was therefore held good.

THE PROPOSED WIDENING OF THE POULTRY AND CHEAPSIDE.

The Works and General Purposes Committee of the Metropolitan Board of Works have reported to the Board that they have inspected the locality, and also received a report from their architect, from which it appeared that the width of the Poultry was about 39 ft., and that it was proposed to throw 13 ft. 6 in. in depth by a length of 50 ft. into the street, increasing the width for the said 50 ft. from 39 ft. to 51 ft. 9 in. at Old Jewry, and 53 ft. 3 in. at the eastern end of the improvement, being a continuation of the line of the setting back of the site of St. Mildred's Church and of the Union Bank of London. The gross cost of this, the architect was informed, was 44,400*l.* 17s. 9d., and the ground at the rear of the improvement left for recoupment had been let at a rental of 1,200*l.* per annum, which at twenty-five years' purchase was 30,000*l.*, and, deducted from the gross cost, gave 14,440*l.* 17s. 9d. nett, as against 15,840*l.* 17s. 9d., the estimated cost. The committee believed this to be a very valuable improvement, in which the Board might properly assist. They thereupon recommended the Board to contribute one-half of the cost, such contribution not to exceed 7,220*l.*

The report of the committee was adopted by the Board unanimously.

THE SAFETY OF SASH-FASTENERS.

Sir,—While agreeing with "A Craftsman" in his statement that the desire for cheapness, and the great competition amongst manufacturers, have resulted in producing at the present time goods which, as a rule, are "flashy and bad," I think his letter in some respects is likely to mislead.

To understand the difficulties to be overcome, I would put shortly before you the present position of the fastenings of our windows.

1st. The police authorities find, from the daily reports furnished them throughout London and other large towns, that a very large proportion of the robberies committed in houses are effected by the thieves obtaining entrance thereinto through the windows, and that, naturally enough, they wish to render this easy ingress more difficult. The entrance is easy sometimes, because, through the carelessness of the servants, the sashes are not fastened.

2nd. When they are fastened, the fasteners can be quickly and easily opened from the outside by the use of a common knife. I am here alluding to the ordinary sash-fastener which is in such general use.

It will, then, be seen that this is not a question of good or bad workmanship, but a question of design. What is wanted is a sash-fastener which shall satisfy these requirements, and it should therefore be:—

1st. Of that configuration that it may easily be seen whether it is shut, while a person is standing in almost any part of the room.

2nd. It must not be possible for thieves to open it from the outside by the use of a knife or thin steel blade.

Therefore, the old spring screw sash-fastener, which your correspondent much praises, will not satisfy the requirement. The servant may not have screwed it, and as it is a little trouble, most probably has omitted to do so. Yet the eye of a master or mistress will scarcely detect it, without trying the fastening. Herein is the old sash-fastener inferior to the one in general use, which can at a glance be seen whether it is fastened. The further objection to the spring screw sash-fastener, is fairly stated by "A Craftsman." This fastener, then, is not likely to be again brought into general use.

Next, let me examine "A Craftman's" own idea; namely, the rebating of the meeting bars themselves, of which he says, the more he considers that process the more he is convinced of its security, and that he is prepared to meet the objection that may be urged against it.

The objections I would advance are, that in any sashes constructed in the usual way, and having cross-bars, there is no security because the rebate cannot be made sufficient. This will be apparent if a section be drawn; and of course still more so if the sashes be made, or a model. It is not novel, being but a repetition in wood of the rebated sash-fastener, which has just been found a failure. Even if it could be made to answer, it would not meet the difficulty, for it is not to be supposed that all houses could have new sashes; and therefore its application would be almost limited to new houses. This I need not speak about, however, until I am shown to be wrong in respect to its uselessness. Practically the only remedy is a sash-fastener giving security without much (if any) increased expense.

It is foreign to the question to say, as your correspondent does, that if the thief cannot open the sash-fastener, he will resort to other modes; because all that is desired is that he shall not enter by reason of the defectiveness of this one article. Every additional impediment in the burglar's way means increased security to the householder. Further, it must be remembered that many a thief would be afraid to carry with him the articles "A Craftsman" names,—drills, jemmies, and centre-bits, a diamond, and a leather sucker; and it is certain that if caught with any such things about him, they would ensure his conviction; while if he only had a pocket-knife, he might escape.

The necessity, then, exists of selecting from the very many sash-fasteners (the number of different kinds of which I may mention has greatly increased of late) some few of which, while they have the requisite security, have also cheapness to insure their general adoption.

The reason I say *some few* is because I consider it an advantage that a variety should be used, so that the burglar may have some little uncertainty as to the particular kind which is the windows of the house he proposes to attack.

I trust shortly to have arrived at a decision the merits of the great number of sash-fasteners I have had submitted to me, which result I to be able to present to your readers.

B. A. E. ETC.

THE NEW PUBLIC OFFICES.

About a month since, a question was put by Lord Redesdale in the House of Lords as to the block of houses in Parliament-street in front of the new Home and Colonial Offices, and Lord Lansdowne replied on behalf of the Government, that this block would remain for the present, as a matter of economy, inasmuch as the houses were producing rent. Of course, Lord Lansdowne replied according to his instructions, but the answer is so palpably absurd on the face of it, that it is marvellous how the officials of her Majesty's Office of Works could have ventured to put such words into his Lordship's mouth. Some of the houses are empty, or let to book-stall keepers and such like; so that the income must be very little. *Per contrâ*, the extra cost to the contractors must be enormous; for any passer-by can see that, on account of the confined space, there is the greatest difficulty in getting in the materials. Not only is a large unnecessary cost thus put on the contractors, but they must be inevitably delayed to a serious extent; and as the Government are put to cost and inconvenience for the want of these offices, it is plain that the interest on the outlay which is lost by delay in completing them must be tenfold the trifling rents which the Government are receiving from weekly or monthly tenants. It seems the fate of her Majesty's Works to be continually governed with the mixture of reckless extravagance and miserable parsimony so well described by Mr. Gladstone some two years since.

A Looker-on.

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union is formed, consisting of silicate of iron, lime, and alumina, which hardens into an artificial stone of some strength; the plates are firmly backed up, and the ship is much strengthened throughout her structure. As long as there is little cargo in the ship, she makes but little water, and seemingly is in perfect order for the longest sea-voyages: this, however, is delusive, for when the ship is loaded, say 20 ft. deep, and her plates are a little strained by the motion of the ship, she begins to leak.

* * * *

By affixing cement upon the inside plates of an iron ship, a most deceptive trap is laid. In dock, under survey, the ship appears abundantly strong, and resists the strenuous and honest strokes of a wood mallet. Borings may be taken which seem compact: the ship may not even leak till a small hole occurs deep in the outward surface from working in rough water: when the ship labours, the trap falls, and lucky are the sailors if they escape.

In cementing vessels, it would be well to fill in solid between the frames, and flush with the lining or ceiling about the bottoms of coal bunkers, leaving a course for water in the centre of each bay by inserting a piece of iron piping; the bottom parts of the vessel, forward and aft, should be filled in to nearly the top of the floor-plates, and such other parts as it is difficult to gain access to.

MOVING A CHIMNEY.

We learn from an American newspaper that the great chimney of the Cabot mill at Brunswick, Me., has been moved 20 ft., to allow of the enlargement of the mill. The work was done by a process similar to that by which ships are launched, the chimney being slid along on greased planks. The chimney is 70 ft. high, and nearly 8 ft. square at the base, and it was moved, the flues connected, and the fires started, in eight hours and a half.

WHAT MIGHT BE DONE.

THE LAW-COURTS.

Sir,—Having read your remarks in the last *Builder* relative to the New Law-Courts, I am induced to write the present letter.

You ask whether the people of England have no means of making their sentiments known and felt on the question of the Law-Courts. The answer must be, Yes; and it only requires a little organisation to effect it. The legal profession are chiefly concerned in obtaining convenient courts, as it is in these courts most of their lives will be spent. The next in order is the general public. Well, this being so, all that is required is, that a few men taking an interest in the matter hold a preliminary meeting at some friend's chambers, appoint a committee, elect a chairman and secretary, adjourn to a public room, invite the gentlemen of the press to be present, and enter into the discussion, examining the plans, sections, elevations, and drawings, so that the whole business could be brought before the country, and a fair and impartial judgment be arrived at. The legal profession is a powerful body, and possess great political influence, so that the metropolitan members of Parliament and many representatives of the provinces would certainly attend.

Argus.

THE NEW "OLD BANK," MALVERN.

The new premises now occupied by the Old Bank are not quite new, as premises, for the original building was before occupied by Messrs. Salmon & Co. The entire shop-front has been taken out, and new fenestration substituted, of Cradley stone supports, oak bronzed frames filled with extra thick plate-glass, protected with Clarke's patent revolving shutters. The entrance-door, a double-margin one, constructed to match, opens into a lobby 7 ft. square, common to the bank and the manager's residence. The doors leading to the banking department, also of oak, and glazed, are hung folding, and flanked with bronze columns of Ionic character, surmounted with elliptical entablature, also bronze. Entering through these doors is the public business portion of the establishment, which is about 30 ft. by 20 ft., filled with counters and desks of mahogany. The doors and finishings are of oak, relieved with bronze mouldings and ornaments, all the wood being French polished. Godwin's encaustic tiles, specially designed for these premises, form the floor of the bank and the lobby. The books are kept, when out of use, in "the strong room," underneath the floor. To convey them to this place a hydraulic lift, with a capacity of 4 cwt., has been constructed, by means of which the books are lowered at night and lifted in the morning by the expenditure of only 13½ gallons of water for the double journey. This room is approached in the ordinary way, and for ordinary purposes, by an iron staircase, which, as well as the lift, is guarded by thief and fire proof iron doors, and with all modern improvements for the purpose of keeping out thieves, fire, or damp. Inside it is finished off with Parian cement, having a polished face. It is fitted up with iron shelves for boxes, &c. An additional security is afforded by a Chubb's patent door, gate, bolts, bars, and locks.

The manager's room is situated at the west end of the bank, separated by an oak glazed screen, in keeping with the other doors. The whole of this department is heated with hot water, circulating in iron pipes, on the low-pressure system, the pipes being enclosed by specially designed ornamental bronze cases. The walls are of Parian cement, painted and decorated.

The doors are protected by electrical appliances, and on being tampered with, alarm-bells are rung in various parts of the premises.

The general contractor for the work was Mr. John Everal, of Malvern, whose foreman was Mr. Thomas McCann. The heating apparatus gasfitting, bellhanging, &c., were supplied by the trustees of Messrs. Guy & Son, Malvern; the hydraulic lift, stairs, folding-doors, &c., by Whitmore & Binyon, London; the electric bells, by A. Boyd & Son, London; the iron fittings in the safe, by Hamsher, Malvern; the plumbing and glazing, by Davis & Son, Malvern; and painting, paper-hanging, decorations, &c., by Mrs. Adams, Malvern. The entire arrangement of the work was carried out under the superintendence of Mr. H. Haddon, architect, Malvern; clerk of the works, Mr. J. S. Alder.

PRESTON COVERED MARKET.

The people of Preston have been unlucky as to their proposed market. If we remember rightly, after its erection, in January, 1870, at a cost of 6,000*l.*, it fell down in May of the same year. Recently a contract for its re-erection was entered into by Messrs. P. D. Bennett & Co. These gentlemen have now stopped the work, and have written:—

"We unhesitatingly say that a roof constructed in accordance with the plans and drawings furnished to us cannot stand, and this must be perfectly clear to any engineer accustomed to work of this description."

The committee have since instructed the engineers to call on the contractors to complete the work in accordance with their contract.

SHAKSPEARE'S LAND.

Mr. Halliwell-Phillipps, whose recent accession to a new name and fresh fortune has already been marked by some munificent acts, has just purchased the theatre at Stratford-on-Avon,—a very ugly modern brick building provokingly standing in the centre of Shakspeare's New Place Gardens, and intends to pull it down, and give the site to the public. We have no doubt whatever that Mr. Halliwell-Phillipps is well advised, and that his liberal act will be to the general advantage, but we, nevertheless, should be sorry to think that Stratford-on-Avon is to be left without a theatre.

DORKING PUBLIC HALL.

The progress of the works in connexion with the New Public Hall in Dorking, has, during the past few months, been rapid. The walls of the front building, containing the assembly-room or concert-hall, are up to their full height; all the roof principals are in position; and everything is nearly ready for the commencement of the slating. It is not at present intended to carry out the full designs and wishes of the architects as regards the internal decorations of the walls and ceilings. The block of old buildings formerly the model lodging-house, has, under the hands of the architects, been transformed into extensive suites of rooms available for various purposes, either by themselves or in conjunction with the large hall. On the same floor with the assembly-room, and connected with it by a short corridor, is a room suitable for magistrates' meetings, lecture or supper room, &c., with retiring-rooms, offices, and other necessary conveniences. At one end of the assembly-room is a retiring-room for performers, having also direct communication with the street by means of a separate staircase. On the floor above and opening into the large room, is a gallery that may be used either for an orchestra or a ladies' gallery, with retiring and cloak rooms attached. On the ground floor, in addition to the covered space under the assembly-room is a smaller hall suitable for small public meetings, lectures, &c., and to which separate access can be obtained when desirable by means of the entrance-door at the side of the old building; and under the principal staircase are arranged gentlemen's lavatories, &c. The architects are Messrs. Driver & Rew, and the contractor is Mr. Shearburn, of Dorking.

COMPETITIONS.

Sandgate Church, Kent.—Designs for a new memorial tower (to commemorate the recovery of the Prince of Wales) have been submitted in competition by Mr. Morley, architect; Mr. J. Gardner and Mr. S. S. Stallwood, architects, of Folkestone, and the committee have decided to accept the design submitted by Mr. Stallwood, which will be carried out as soon as the necessary funds are raised.

School-Board for London.—The following six gentlemen have been invited to compete for the schools at Hatcham (Greenwich district):—Messrs. Joseph Gale, John Giles, Charles F. Hayward, G. Gilbert Scott, jun., John P. Seddon, and E. Wyndham Tarn.

New Presbyterian Church, Liverpool.—The committee of this church have selected, in limited competition, the design bearing the motto, "We Fight to Win," the authors being Messrs. J. E. Murray & G. H. Thomas, architects, Liverpool. The second premium is not yet awarded.

FOREIGN CONGRESSES.

At the Institute of Architects, March 18th, Mr. F. P. Cockerell, hon. secretary for foreign correspondence, announced that the thirty-eighth session of the Scientific Congress of [illegible] would open at Saint Brieuc, on Monday, t[illegible] of July next. All persons interested in the [illegible]gress of science, literature, and the arts [illegible] invited to co-operate.

The proceedings of the session will be divi[illegible]ed into five sections:—

1. Natural Science, Physics, and Mathem[illegible]atics.
2. Agriculture, Industry, and Commerce.
3. Anthropological and Medical Science.
4. History and Archæology.
5. Philosophy, Social Economy, Jurisprudence, Literature, and the Fine Arts.

It was also stated that the Royal [illegible]cademy of Belgium proposed to celebrate the [illegible] hundredth anniversary by a festival, to be held on the 28th and 29th of May next. The Institute had been invited to send a representative, and Professor Donaldson, past-president, at the request of the council, had kindly consented to attend on the occasion, in conjunction with Mr. E. I'Anson, vice-president.

BOARD OF PUBLIC WORKS IN IRELAND.

Sir,—The article in a recent number of the *Builder*, relating to the proposed changes in the Board of Public Works in Ireland is a proof of the catholic interest you take in whatever concerns the architectural profession in all its branches. Of this, indeed, there are numl[illegible]less instances in the goodly row of volumes [illegible] the *Builder* that I possess now, dating back a quarter of a century, from 1846 to 1871. I therefore trust that you will afford me space to supply an omission in the article referred to, and for a few general remarks on the subject of it.

A reference to Thom's Official Directory will show that in addition to the officers mentioned as constituting the architectural staff, there are six district clerks of works located in the principal cities and towns of Ireland, whose duties are to survey sites for new buildings, to inspect works in progress, and measure them up when completed, to check and certify contractors' accounts, and to prepare specifications, &c., for alterations and repairs of existing buildings in their respective districts; so that it is they who

have to take the long drives and perform the other services attributed to the surveyors, who only leave Dublin a few times at most in the summer; indeed, one of them, although otherwise no doubt very hard-worked, has not I believe left home even once a year for some time past.

The duties of the surveyors are chiefly confined to the buildings in Dublin, and revising the specifications and submitting reports and accounts forwarded by the district clerks of works under the general direction of the architect.

Having set this matter of fact right, permit me to refer to the changes indicated; and as it appears that not only the chairman of the Board, as at present, but a third Commissioner, as director of works, is to be a Royal Engineer, it may be well to glance at the working of the now defunct Board of Ordnance under those officers. The *Builder* having taken a leading part in the discussion of the subject at the time, you will probably remember that the late Lord Herbert of Lea (when at the War Office) contemplated severing the connexion between the military and civil branches of that Board, as it was found that they worked badly together. You then advocated transferring the works at barracks and other buildings to properly qualified civilians, and leaving fortification entirely to the military corps, and it was generally supposed that, had Lord Herbert lived, some such arrangement would have been carried out: however, the decision was subsequently reversed, and the civil branch is now in course of being broken up, and it is thought that some of the civilians may also be provided for at the Irish Board of Works by the changes now under consideration. If those changes are correctly shadowed forth, they would convert the Board of Works almost into a revived Board of Ordnance, where the military heads would have power and the civilians practical knowledge, which would in course of time produce the same results as caused the breaking up of the Board of Ordnance.

As you intimate the probable disappointment of the present staff of the Board of Works in their long-deferred hope of receiving better pay, may I in conclusion add a few remarks on that subject. Some years ago the surveyors were placed on the same footing as first-class clerks in the secretary's and accountant's departments, and the district clerks of works get the same maximum salary as the second-class clerks, their minimum salary remaining as it had been for many years before, when the architect and the surveyors were clerks of works; but since then the clerks in each class received an advance which neither the surveyors nor the district clerks of works shared with them. Surely the surveyors should possess qualifications at least equal to the higher clerks in addition to their professional knowledge; and the district clerks of works certainly must be fit to discharge the duties of second-class clerks to properly fulfil their own, which require special training and long practical experience, and involve the endurance of much hardship and privations when travelling to remote and almost inaccessible places in all seasons; yet it is a fact that they are, and probably may continue to be, worse paid than the ordinary clerk, with whom they were classed some years ago, although the clerks in the Board of Works and other public offices in Ireland justly complain that their pay is much less than in the corresponding departments in England.

AN OFFICIAL.

THE CHELSEA EMBANKMENT.

THE contract to embank the northern shore of the river Thames, between Chelsea Hospital and Battersea Bridge, was let to Mr. Webster for 133,950*l.*, including a portion of the sewer corresponding in length with the Embankment, and the foundation-stone was laid by Colonel Hogg, the chairman of the Metropolitan Board of Works, in August last year.

The works, which are now in active progress, consist of an embankment-wall three-quarters of a mile in length, by means of which, when completed, 9½ acres will be reclaimed from the foreshore of the river. The area behind the wall will be occupied by a roadway, 70 ft. wide, and by ornamental grounds; while at a depth of more than 30 ft. below the roadway-level will run the sewer. The wall is formed of Portland cement concrete, faced with granite, being similar in this respect to that of the rest of the Victoria Embankments. The face of granite, however, instead of being dressed smooth is simply hammer-dressed, the style of masonry being that which is technically known as drafted and scabbled-faced. The parapet and pedestals for the lamp-standards will be of solid granite, and will be fine dressed work, although the contour will be bolder and less refined than in the other embankments. The concrete backing of the wall is 12 ft. thick at the base, 7 ft. 9 in. midway of its height, and 4 ft. 6 in. at the top, immediately under the footway of the Embankment. The concrete is tipped into its trench behind the granite, and when the tide has nearly risen to the top of the trench a sluice is opened, by which means the water is admitted and covers the concrete work. When the tide has fallen below the level of the trenches the water is rapidly pumped out, and the work again proceeded with. This arrangement is necessary, as the work is being executed without the aid of whole-tide cofferdams, the comparatively shallow depth to which the foundations of the wall extend enabling those expensive items of construction to be dispensed with.

WASTE-PIPES AND DRAINS.

SIR,—Allow me to make a suggestion in your columns on one point to which I attach considerable importance. It has often been pointed out (see *Builder*, March 30, page 240) that the water of our cisterns is liable to contamination from the effluvia arising from the waste-pipe, which I believe, as commonly constructed, delivers immediately into the house-drain.

The remedy is simple and easy. Let the waste-pipe be made to deliver into the supply-pipe, between the cistern and the closet-pan. By this arrangement, if there is any overflow it will pass off through the pan without any direct communication with the drains, and thus all access of foul air will be cut off.

I have myself adapted this plan to my own closets without difficulty.

EXPERTUS.

*** The remedy proposed is by no means complete. The waste-pipe should discharge into an open sink, whence the water should flow off to the drains.

CHANGE IN PAINT.

SIR,—A reader of your paper, who signs himself "Gasfitter," asks, in last Saturday's number, why his light-coloured paints, in London, tarnish and turn grey and black, assuming a metallic lustre after a short wear; and gives his opinion that it is owing to *inferior* white-lead. But the *very best* white-lead will turn black, and will assume that peculiar mother-o'-pearl appearance, rather than metallic, when exposed to an atmosphere containing sulphuretted hydrogen gas,—such as would be the case in London.

There is a paint manufactured in Liverpool, by the "Silicate Paint Company," that has no white-lead in it, and therefore would probably not tarnish.

THE GASFITTER'S FRIEND.

PRESERVATION OF IRON.

SIR,—I shall feel obliged if any of your readers can inform me where I can procure a preparation for dressing iron shafting, metal castings, &c., so as to prevent them from rusting through coming in contact with water, and at the same time leave the water quite free from stain of any kind. If any preparation of a liquid nature is in existence with which the iron or metal could be dressed, and afterwards be free from liability to rust, and from which water could carry no stain, perhaps some of your readers may be able to inform me, through the medium of your paper, where such may be obtained. The article dressed would require to be in contact with water several weeks between each dressing.

R. P.

RIGHT TO PAINT WALLS.

AT Nisi Prius in Ipswich, before Mr. Justice Blackburn, in the case of Fox *v.* Clarke; this was an action for trespass and painting part of the walls of the plaintiff's house. The defendant pleaded not guilty; that the house wall was not plaintiff's, that it was defendant's; that plaintiff gave defendant leave and licence to paint it; that the plaintiff granted the right to do so to Mr. Phipson, Mr. Clarke's predecessor, and Mr. Phipson had granted it to Mr. Clarke. Defendant paid 1s. into court.

Mr. O'Malley put in a photograph of the *locus in quo*, which was two houses in Museum-street, Ipswich, one of which belonged to Mr. Fox and the other to Mr. Clarke. These two houses were built upon one architectural design, which included a pediment in the centre block, which was over the door of Mr. Clarke's house, but the tenement did not square with the outer architectural design, the party-wall running some distance from the end of the pediment. Another architectural feature was a portico over the defendant's door, but the internal party-wall ran between the column of the portico next Mr. Fox's house and Mr. Clarke's door, so that the column of the portico of Mr. Clarke's entrance was really part of Mr. Fox's house. Mr. Fox had hitherto painted the piece of pediment which was upon his house, and the trespass complained of was that Mr. Clarke had painted the piece of the pediment, the string-course, and the column of the portico which were in front of Mr. Fox's house.

A good deal of discussion took place, in the course of which Mr. O'Malley said there would be no difficulty in arranging for the whole portico and pediment to be painted alike, Mr. Fox having not the slightest wish to disfigure the houses by doing otherwise. His only object was to decide the question of right to the wall, which might be of importance in case of alteration to the property. The case for the defendant was that the whole portico was his property, and the wall of Mr. Fox's house behind it was a party-wall "returned," used in the architectural sense.

Mr. Justice Blackburn said his opinion was against the contention of the defendant. He thought the party-wall should be drawn straight out to the street, and entered a verdict for the plaintiff on the issues which raised the question of right, giving the defendant leave to move the Court of Queen's Bench, the Court to have power to draw all inferences of fact, and say whether he was right to admit the evidence of Mr. Lull, damages 1s., with a certificate for costs. He supposed there would be no necessity for an undertaking as to the painting in future.

Mr. O'Malley said certainly not. His client would be willing to permit the defendant to do it on payment of a nominal rent.

DARLINGTON FEVER HOSPITAL.

SIR,—Please correct a misprint in my letter, p. 240, *ante*. In 3rd paragraph, 4th line, the last word, "the," should be *his*, making it read the mayor's, not the architect's partners.

ONE WHO LIKES FAIR PLAY.

SIR,—That "One who likes Fair Play" has not had it, is very evident; and my advice, gained from painful experience, is "Grin and endure it."

He asks, "Can you conceive a more cruel case of injustice to the other competitors?" And since it is, so it is said, some satisfaction to know that some one is worse off than yourself, I would console him by saying that as he does not mention that the committee actually *instructed* architects to send in designs upon the Pavilion plan, they were consequently free to select what they pleased, and *of course they chose the worst.*

What, now, will "One who likes Fair Play" say to a case where positive instructions were issued that certain schools should be planned in accordance with the "rules of the Committee of Council on Education," and then selected a plan *totally in opposition* to those rules, and yet were so polite to the competitors as to say *they had chosen the one most in accordance with them?*

I do really hope that something will be done some day to make committees responsible at law for such palpable breaches of faith.

ONE WHO BOUGHT HIS EXPERIENCE AT WORCESTER.

ON OUR ROYAL ACADEMY.

SIR,—It is now above a hundred years since the Royal Academy was first established. As an artist who, having his three elder brothers students of the Academy, naturally expected to be permitted to enter also as a student when his father had selected him from feeling as an artist, while those brothers were permitted to be there rather than be idle at home, judge his astonishment when his father, a Royal Academician himself, declared he would not allow him to enter there as a student until he had been under him some years; for, said he, "I shall ground you more thoroughly in art than you can become grounded there." His mother, overhearing the observation, said, "The Royal Academy will then say your son is not qualified."

Time reveals most things, and the recent advertisement in the *Times*, for "Rudimental and Technical Instructors," for the Royal Academy, explains now the reason why that Royal Academician refused to allow his youngest son to enter so soon as a student. In this case, it appears that there is a sad deficiency in that royal institution, not only in admitting members excellent only in auxiliary art, and omitting to see objective art in the human figure as first and foremost to all others.

The Royal Academy is sufficiently rich to have a branch academy at Rome, where a Royal Academician might, if indisposed, sojourn as president, and where the student, having received his travelling medal, would derive advantage from his teaching, and be fostered with every aid.

ART.

THE EAST LONDON MUSEUM AT BETHNAL-GREEN.

IT is at last authoritatively announced that an endeavour is to be made now to open this museum to the public. We gave a view and plan of it in our volume for last year, pp. 46–47. With the exception of some slight details at the main entrance the building is now completed, and the internal decoration is also finished. Great numbers of objects of art and science are daily being removed from South Kensington to Bethnal-green, under the superintendence of Mr. Henry Cole, C.B. The museum will be partly stocked with collections lent for the purpose by her Majesty, the Royal Princes, the Marquis of Westminster, the Duke of Abercorn, Lord Elcho, Sir Coutts Lindsay, and others. At the request of Mr. Cole, Sir Richard Wallace has promised to lend the magnificent gallery of pictures known as the Hertford collection. Those collections which are sent from the South Kensington Museum will be changed from time to time, but the food collection will hereafter be permanently located at Bethnal-green. The hours during which the East London Museum is to be opened will be the same as at South Kensington, viz., on Mondays, Tuesdays, and Saturdays, free days, from 10 a.m. to 10 p.m.; and on Wednesdays, Thursdays, and Fridays, from 10 a.m. until sunset, on which days a charge of 6d. for admission will be made.

THE PRIZES OFFERED BY THE TURNERS' COMPANY.

Sir,—According to a prospectus issued by the Worshipful Company of Turners last year, it is proposed to give each year the silver medal and the freedom of the Company to any one workman or apprentice in the trade who may send in the best specimens of hand-turning for the year.

As there will no doubt be prospectuses issued shortly, will you allow me to point out to you some of the conditions of last year's prospectus which I consider act unfairly towards the majority of the competitors, and I hope will be altered in this year's conditions? In the first place, I do not think that a master turner ought to be allowed to compete against a journeyman, as was the case in last year's competition, for the successful competitor was (and is) a master employing several journeymen. Had it been understood that the term "workman" included masters and journeymen several masters would have sent in specimens. Few journeymen turners have lathes and tools of their own, and those who have would have to work after they have already done a day's work to make their specimens, whereas a master can easily afford to lose time to make such things, as well as having a better chance to buy materials, &c., when he has the profits of several journeymen to depend upon. And I am certain that many masters will compete this year unless this condition is altered, and therefore the chances of a journeyman getting the prize will be very small indeed. In another paragraph it is stated that a certificate of good conduct must be sent in by each competitor. I cannot understand how a master could send in a certificate, because he might be a perfect reprobate, and yet, by employing steady and good workmen, give satisfaction to all his customers.

Paragraphs 2 and 3 are as follow:—

"The materials to be used will be varied in different years, so as to include Wood, Ivory, Metals, Stones, Spar, &c."

"The competition for this year (1871) will be Turning in Wood."

The prize specimen was in wood and ivory. I think the prospectus ought to state whether a combination of materials will be allowed, as I cannot reconcile the award with these two conditions.

There were six qualities mentioned which would be considered in awarding the prize, but I shall only comment upon three of them.

Quality 1.—"Working to exact dimensions, illustrated by a cylinder, 6 in. long and 2 in. in diameter, or any other object which shall measure exact inches without fractions."

To my mind it would have been better to have fixed dimensions, because a competitor making a cylinder, 6 in. by 2 in., would have a chance, according to the conditions, of getting the prize; whereas, another one making one 18 in. long by 1 in. diameter, would stand no better chance, when there is obviously no comparison in the amount of skill necessary to make the two articles.

Quality 3.—"Exact copying, so that two objects produced, such as two cups, vases, boxes, or chessmen, may be fac-similes in every part."

It ought to be clearly defined how these facsimiles in every part are to be produced; for, if one competitor turned, say a set of chessmen, in pine, with ordinary gouges and chisels, and the other turned a set in ebony, with tools made to the pattern like a moulding-plane iron, the latter would not have done such a skilful piece of work as the former, and yet possibly he might get the prize.

Quality 4.—"Neatness of design, symmetry of shape, and good form of mouldings."

The company should state whether the competitors are to design their specimens, for one might procure a first-rate design from a designer (as was the case last year), and another attempt to design his own, and however faulty it might be, the latter would deserve more credit than the former. It ought also to be stated by the competitor whether the specimens were designed by himself or not.

The conditions should also state if the specimens are to be glass-papered and polished, as those two processes often put a good finish to bad work.

And, to make these competitions of any practical use, the specimens ought to be exhibited to the trade, with their good, and, if any, bad qualities pointed out by the judges, so that the unsuccessful competitors may see their failings, and benefit thereby, and the trade in general derive a great deal of valuable information.

I must concede, sir, that the honourable company have a perfect right to give away their prizes under any conditions they may think fit; but I feel sure that unless the conditions are altered in something like the direction I have suggested, the company will not have the confidence of the great majority of wood-turners.

I think if a few turners would take up this subject, it would benefit the trade very much.

W. A. Barber.

Books Received.

Technical Manuals: Gothic Stonework. By Ellis A. Davidson. London: Cassell & Co.

We have spoken with commendation of several of the manuals prepared for this series, by Mr. Davidson, and should be glad to know that they were largely circulated. We must speak in more measured terms of the little volume before us, well intentioned as it is. The illustrations are so spiritless, so entirely devoid of anything like the Gothic feeling, that they are calculated to do more harm than good. Gothic details and ornaments can be drawn properly only by those who have well studied the style, and not always by them. There are some persons who think they can do everything: this is usually a mistake.

The glossary of terms, too, is unsatisfactory. It is an error, for example, to state under the head "Bay Window;" that if carried on projecting corbels, such windows "are called *Oriel* windows." Oriel windows are not necessarily carried on corbels.

Tegg's Readiest Wages Reckoner; calculated on the Basis of Nine Hours per Day. By William A. Stone. London: Tegg.

This timely Reckoner of Wages will have to be substituted for the previous reckoners in establishments where the nine-hours movement has been successful. The author is one of the firm of James, Edwards, Cash, & Stone, well known and experienced London accountants. The work cannot but be useful to all engaged in skilled labour. The calculations being extended to 108 hours, adapts it for use when the wages are paid fortnightly, as well as weekly. The tables enable the wages due for any given number of hours, or the fractions of any hour, to be read off speedily, and without complication. A table at 45s. has been added by special request of an experienced wages clerk, with relation to halving the amounts, as well as taking them as a whole.

VARIORUM.

"A Handbook of Sewage [illegible]isation" (Spon, Charing-cross) gives, in a [illegible]acted condensed shape, reference to the principal [illegible] systems that have been tried in England, and [illegible]ppears to be exempt from bias. The author is Mr. Ulick Ralph Burke, Barrister-at-Law.——"Cassell's Illustrated History of the War between France and Germany," which has now reached its fifteenth part, gives a remarkably clear and interesting account of this momentous enterprise. The engravings with which it is filled are really illustrations, and serve to convey to the reader a vivid idea of the persons and places mentioned.——The new story in *Cassell's Magazine*, titled "The Doctor's Dilemma," by Hesba Stretton, promises well. The first five chapters in the April number make us long for May.——The principal paper in *Temple Bar*, "Good-bye, Sweetheart," also by a lady, is coming to an end, to the sorrow of the readers of that periodical.——*The Argosy* gives us more woman's work, and very agreeable work. The story "Within the Maze," by Mrs. Henry Wood, who edits the periodical, will interest a large circle of readers.——The sketch of the Boat Race by George Cruikshank, Jun., in *London Society*, is remarkably funny and clever; it needs a glass for its due appreciation. "Little Polly Pilkerton" is also a very good illustration of its class.——The *Art Journal*, offering a plea for practical female education, says,—"If it were not a fact of daily occurrence, it would seem absurd to state that we have no right to expect women to do by instinct that for which men give years of patient toil. But until we secure for girls the same kind of apprenticeship given to boys, we have surely no cause for wonder that similar work should not be done as well by women as by men. If we allow that women may undertake certain branches of work, it must follow that we grant also a system of regular training or apprenticeship for girls. For boys this is a matter of course. Society practically endorses for them the old Hebrew proverb, "He who brings his son up without a trade brings him up to steal;" and no toleration would be given to the man who brought up a family of sons without giving them either fortune, profession, or trade. There are hundreds of girls with a pure passion for knowledge and a love of study, as intense as any other power of love with which women are universally credited, who have yet to stand aside, watching an education of which no share comes to them; and, later in life, to sit idle at home, envying the activity which is denied to them, until, under some sudden pressure of necessity, they find themselves rudely jostled out of their quiet corners, and breathless in the midst of a crowd of eager bread-seekers."——The *People's Magazine*, speaking of the erroneous view taken by some people of the work of others, says,—"In a trades' procession a few years ago, a wonderful piece of glass-blowing, the result of much time and labour,—a ship in full sail, made entirely of glass,—was carried in triumph as the masterpiece of the craft. 'Ah,' said one of the exultant glass-blowers, 'it would be a long time before Derby or Dizzy could do a real piece of work like that.' The thing was utterly useless: it was in the worst possible taste (for glass is not suitable for such work); and therefore it must have been irredeemably ugly; and yet, because it had cost much time and labour,—*hand* labour,—therefore it was to be preferred to all the brain-work and moral and physical labours of the then leaders of the respective Houses of Parliament. This notion is an old as well as a widespread one; it is embedded in the word 'school,' where we flatter ourselves that a good deal of work is done, and which yet is nothing but 'scholé,' the old Greek for 'leisure.' So that *school* hours are, according to the original sense of the term, *leisure* hours; and, contradictory as it may appear, this sense is fully recognised at the present day; for how many hundreds of boys are every day, for a time, or for ever, taken away from *school* in order that they may go to *work*."——"Concerning Sewage and its Economical Disposal. By Frederick Hahn Danchell. C.E. London: Simpkin, Marshall, & Co. 1872." The purpose of this pamphlet is to advocate the cause of charcoal,—in particular peat charcoal,—as the great panacea and solution of the sewage question. Peat charcoal is, no doubt, a very good thing in some cases,—especially for those interested in peat charcoal; but for the practicable, efficient, and economical settlement of the great question of the best possible disposal of the sewage of *towns*, and the cleansing of *rivers*, we have very little faith in its prospects or its practical efficacy. The author very truly says, in the preface, that, "to attend a meeting of sewage doctors, and hear them wrangle and explode each other's doctrines, is enough to bewilder any unscientific auditor. In the matter of sewage there is really little help to be had from authority; and a plain man must be content to trust his own judgment." Now, although the author is a C.E., he is here also an S.D., or sewage doctor, and we wonder whether he is likely to "bewilder the unscientific auditor" when he says in the summary of his case, with reference to the alleged result of the charcoal process,—"The advocates of sewage irrigation profess to accomplish the same result, but with what success let the evidence of numerous commissions of inquiry testify!" This is highly significant, no doubt, but it is more like a pleading for the plaintiff,—*in re* Peat Charcoal *versus* Sewage Farm,—than anything else. Still, we watch the progress of the experiments in peat charcoal with interest; and we think that, in special cases, and for partial, though not for general or really extensive utility, in the settlement of this question, it may be recommended.——"On the cleansing of Rivers. By C. E. Austin, C.E. London: Mitchell, Parliament-street." On this question Mr. Austin says,—"It is evident that the process which extracts in the most economical manner the largest proportion of the organic matter of sulliage must be found the most efficacious; and that will be sometimes filtration, often irrigation, and most often both filtration and irrigation combined. Irrigation appears to be a very effective process for the purification of sulliage water and for the utilisation of the contents of the sewers; but it is a very inconvenient one to depend on solely; because, when the population of a town increases, the means of procuring additional land for irrigation diminish. . . . . The improvement can only be made by the introduction of filtration, if not already practised."

Miscellanea.

The Artizans', Labourers', and General Dwellings Company (Limited).—The fifth annual social gathering or *soirée* of the shareholders and friends of this undertaking has been held in the Westminster Palace Hotel. After the very large party of ladies and gentlemen who met on the occasion had partaken of a substantial and varied repast, the chair was taken by the Earl of Shaftesbury, who was supported by Archbishop Manning, Sir Curtis Lampson, Dr. Baxter Langley, and others. Mr. William Swindlehurst, the secretary, read an elaborate report of the past year's operations, showing that the company have estates in Liverpool, Birmingham, Bradford, Salford, and other large towns, besides those in the neighbourhood of the metropolis, at Brixton, New-cross, and Hornsey. The houses put up are let at 5s. 6d., 4s. 6d., and 4s. 3d. per week. The share capital now amounts to 18,580*l.*, presenting an increase of 12,580*l.* over what it was in 1870. The uncalled capital is 22,000*l.* For the past year the directors were enabled to declare a dividend of 6 per cent. on the share capital, and to pay 5 per cent. on deposits. Mr. Swindlehurst spoke of the great advantages the company were conferring upon the industrial population, by inculcating habits of thrift, temperance, and economy. All those happy results were brought about through the principle of making capital constantly reproductive. There were 1,600 working men holding shares in the undertaking, varying from 50*l.* to 1*l.*, and the list also included the names of the highest nobles of the land, dignitaries of the Church, literary, artistic, and scientific men, who sympathised with a movement the direct effect of which was to make people more conservative in their love of country. Several addresses were given, one being specially devoted to the advocacy of the co-operative principle generally, while at intervals the proceedings were pleasantly diversified with music and song.

Exeter Cathedral.—The Lady Chapel has passed out of the hands of the decorators (Messrs. Clayton & Bell), and nothing remains to be done except the reredos and the floor. The workmen are now busily engaged in laying down the encaustic tiles and marbles of which the floor will be composed. Some difficu[illegible] been experienced with regard to the re[illegible] It has at length been decided to fill th[illegible]tral panel with a piece of alto-relievo sta[illegible], illustrating the following passage of Scri[illegible]e, "The seed of the woman shall bruise the s[illegible]ent's head." The side-panels will be filled i[illegible] with appropriate work. The massive Purbeck pillars in the choir are being thoroughly repaired, all the defective parts being removed, and replaced by freshly-quarried marble. In this work 100 tons of marble have already been used, and it is calculated that 60 tons more will be required. The carving of the woodwork for the choir-stalls, &c., which has been intrusted to an eminent London firm, is in an advanced state, and will be finished by October. A marble pulpit, the gift of the chapter-clerk, will replace the old wooden structure.

Music for the Blind.—The normal College and Academy of Music for the Blind, near the Crystal Palace, is a most remarkable adventure, says the *Echo*, in reference to a project for behoof of the blind, promoted by Dr. Armitage and Mr. Campbell, and referred to in our columns some time ago. "The blind are taught by blind teachers under a blind principal and general director—an American gentleman, Mr. F. J. Campbell. Mr. Campbell has assured us himself that in America he has frequently made from 800*l.* to 900*l.* per annum by the exercise of his musical powers as pianist and instructor. The success of his system has tempted him to transplant a branch to England, and already a new staff of blind teachers have been sent for from America. The education given is a thorough sound general course of instruction, with the special addition of music—an art in which the blind peculiarly excel. Among the presidents we notice the names of Lord Chelmsford and the Marquis of Westminster, and among the musical committee those of Sir Sterndale Bennett and Mr. Henry Leslie."

Her Majesty's Opera.—Messrs. Bracher & Son, under the superintendence of Messrs. Nelson & Harvey, the architects to the theatre, are again converting old Drury into an opera-house, for Mr. Mapleson. The works have to be finished for the opening night, April 6th.

Improvements in Bedford-street, Plymouth.—Two houses, with shops, just erected for Mr. Matthews, are considered an acquisition to the street architecture of Plymouth. The style is a somewhat freely-treated description of French Classic. The material is Southampton bricks of a warm red colour, relieved sparingly by bands of the same material of a lighter tone. The dressings—which are of an ornate description—are of Portland stone. The shops are divided, and supported on either side by massive pilasters of polished granite, from Messrs. Freeman's works at Penryn. The building is from the designs of Mr. J. H. Keats, of Plymouth, who has personally superintended its construction; and Mr. Finch is the builder. Mr. Harry Hems, who for the last twelve months has had the carving of the new Guildhall in hand, has executed, with his assistants, the whole of the stone carving.

New Theatre for Darlington.—Plans for a new theatre which Mr. Scotson intends to build in Northgate, Darlington, on the site of the present building, are described by the local *Times*. It is proposed to considerably widen the theatre, to add several feet to its length, and to raise it by two stories. A new stone front is to be built into the edifice, uniform with the Bridge Inn, which will also be altered; and the whole façade, it is proposed, shall be relieved by a handsome portico, forming an arcade extending the whole length of the united buildings. The plans of the internal arrangements of the theatre provide for every accommodation in the way of cloak-rooms and lobbies. The dress-circle will be constructed on the horse-shoe principle, and there will be separate entrances for the dress-circle and the pit and gallery. The architect is Mr. Wm. Hodgson, of Darlington.

Steel Tools.—Mr. La Breche-Viger, of Montreal, has obtained a patent for a method of manufacturing axes, hammers, and other implements, by first making them of wrought iron and then converting them into steel. The nature of the invention consists in manufacturing the articles to be treated under the process of and with wrought iron first, and immersing them in a bath of molten cast-iron free from sulphur and phosphorus, and carburised to its utmost capacity. The best for that purpose is spiegeleisen, but in default thereof such cast-iron may be made by melting good malleable iron or blister steel in a cupola furnace with charcoal, or the best anthracite coal, or bituminous coal, or coke, as fuel. The articles are left in this bath a space of time which must vary with the degree of hardness desired to be imparted to the metal and with the size of the articles.

Excavations in Cornwall.—Mr. W. C. Borlase, of Castle Horneck, Penzance, is making excavations near St. Colomb, Cornwall. He has uncovered a sunken kist-vaen, consisting of a vault sunk in the slate-rock surface, lined with slabs, which support a fine cap-stone of an apparently foreign origin. This cap-stone is 10 ft. 6 in. long, 5 ft. 6 in. broad, and nearly 2 ft. thick. The kist, which contained a human skull and other osseous matter, was covered with a pile of stones, blackened apparently by the action of fire, and near the outer edge of a huge mound of burnt earth, the whole forming a barrow, the outer edge of which had evidently been once enclosed within a *revêtement* of disintegrated slate fragments. This barrow forms one of twin barrows some 30 yards apart, between which is the remnant of a bank, which, it is suggested, may have formed either a rampart or enclosure around the two barrows.

Sheep in Boots: a Sheepshank Legacy?—R. T. writes,—The foot-and-mouth disease, so disastrous to sheep and cattle, is said to arise through standing in wet pastures and muck. Is this so? (for I am no sheep or cow-herd). Let us seek a remedy, and bestow a comforting gutta-percha boot (it would be no novelty, for puss of yore was thus equipped), and gutta-percha ribbon wound round; a few turns extra at foot; flame it, and squeeze gently to unite and shape. It would last their lifetime, and protect their trotters when travelling to that bourn whence no sheep return!

The Cotswold Hunt Kennels.—At a recent meeting of subscribers to the Cotswold Hunt at Cheltenham, to consider a scheme for removing the kennels from their present site to a more central point, at Andyversford, it was stated that the cost of erecting new kennels would be about 2,500*l.* The proposal was to establish a limited liability company.

The Proposed Tunnel under the Mersey. The Mersey Railway Company, who have obtained powers to make a railway tunnel under the Mersey, have commenced the preliminary operation of sinking a shaft on a piece of land in Shore-road, near Woodside Ferry. The ground has been enclosed, and the intention is to sink to a depth of 70 ft. below the bed of the river, at which point the cutting of the tunnel will begin. The tunnelling will be performed with two machines, each of which will make a cutting 15 ft. in diameter, under a pressure of 30 horse-power engines. Two other shafts will be sunk at Birkenhead, one of which will be near the gas-works. In the tunnel there will be space for a double line of rails, and it is expected that the work will be completed in two years. The contractor is Mr. John Dickson, of Whitby, Yorkshire.

The Antiquity of Mankind further extended.—An important discovery bearing on the antiquity of man has just occurred, Mr. Edward Charlesworth, F.G.S., having discovered in the Suffolk crag, or old Pliocene beds, in the very heart of the tertiary era, and long before the close of the glacial in the post-tertiary, teeth of the extinct shark (*Carcharodon*), apparently perforated by human agency, as well as many concretionary nodules with longitudinal perforations unlike those produced by the action of boring mollusca. The specimens will be exhibited and described at the meeting of the Anthropological Institute on the 8th of April: so says the *Pall Mall Gazette*. If this discovery be verified, it will carry back the existence of man in England to a period coëval with the Mastodon arvanensis, and far more ancient than the "mammoth age."

The Salt Library.—The obstacle which has so long stood in the way of the acquisition of this collection by the county of Stafford has, at last, been removed. Including the donation of 3,000*l.* from Mr. T. Salt, M.P. for Stafford, the 6,000*l.* required by Mrs. William Salt, of London, has been subscribed, and the collection, together with a building in the Market-square, Stafford, for its reception, will be handed over to the county. Mrs. W. Salt has given 3,000*l.* for the building, and the remaining 3,000*l.* will constitute a fund for providing the requisite fittings and endowing a librarian. The estimated value of the collection is 30,000*l.*, but many of the books and manuscripts it contains are regarded as literary and historic treasures almost priceless. Among other rarities are the autographs of almost every English monarch.

The Space in Front of St. Paul's.—We may now expect that steps will at once be taken to throw open to the public the area at the west end of the cathedral. The Dean and Chapter are to receive from the Metropolitan Board of Works 15,000*l.* as compensation: 5,000*l.* of this, it is stated, will be spent by the Chapter to the arrangement of the paving and other works, and the rest will go towards the decoration of the cathedral inside. It may be hoped that some space will be given up to the roads and pathways on the north and south sides of the building. In connexion with this improvement, the City Lands Committee has agreed to purchase, for the sum of 10,500*l.*, the freehold interest of Messrs. Newbery in the premises No. 44, St. Paul's Churchyard.

Value of Land at South Kensington.—We understand that a plot of building land a short distance from the Horticultural Grounds has lately been sold by private contract to an eminent London builder, through Messrs. Powell, estate agents, of Bayswater-terrace. The extent is five acres in one block, and the price 60,000*l.*, or 12,000*l.* an acre. This affords a wonderful contrast to the value of such a property in the early days of many persons still only middle-aged, but since the first Exhibition of 1851 so great an area of South Kensington has been covered with ranges of private mansions that any remaining land is now sought after with eagerness, and obtains terms which would have appeared fabulous to our fathers.

Utilisation of Waste Sailing Force.—A screw-propeller fitted to a sailing-ship would turn round whenever the vessel moved forward. It has been suggested that the power thus gained might be used to give motion to an electro-magnetic apparatus which would produce an electric light of great brilliancy, far more serviceable for signalling and other purposes than oil-lamps.

Flexible Marble.—Mr. A. J. Holliday, of Wheeling, describes a flexible marble slab, which is procured from the Portland Quarries, Vermont. Professor Hay, of the Western University, of Pennsylvania, describes its constitution as:—carbonate of lime, 97·50; magnesia, a trace; silica, 2·05; water, ·45; = 100. The above composition and its crystalline character together proclaim it to be a true marble, and, at the same time, a pretty pure specimen of that mineral. The indubitable flexibility of the slab is its most remarkable feature. Dana states that "some of the West Stockbridge marble is flexible in thin pieces when first taken out." The slab in the possession of Mr. Holliday is about 2 in. thick, and is nearly as flexible as an equal thickness of vulcanised india-rubber.

The Colony of Victoria. — The rapidity with which settlement is proceeding is shown by reference to a decennial return of the land occupied and cultivated. In 1862, the number of holders was 14,960; the extent of land occupied, 4,090,784 acres, and the extent of land cultivated, 439,895 acres. In the year ending the 31st of March, 1871, the number of holders was 31,842; the extent of land occupied, 9,530,638 acres; and the quantity of land cultivated, 909,015 acres. Machinery upon farms during the year ending the 31st of March, 1871, is put down at 1,402,863*l.*, and the approximate value of the improvements effected, which include buildings of all descriptions, fencing, dips, wells, dams, &c., but not the cost of clearing, 8,777,548*l.*

Trapping and Ventilating Soil-pipes and Water-closets.—The Birkenhead Improvement Commissioners have issued a printed circular as to trapping and ventilating private sewers, drains, soil-pipes, and water-closets, in new buildings, or in connexion with the alterations of houses where water-closets are introduced. The observations point out the more general defects of the present arrangements. Drawings, showing the existing and proposed mode of the connexion of water-closets, &c., with soil-pipes and drains, and for the ventilation of the same, are appended to the circular.

Roman Remains.—An interesting discovery of Roman remains has been made at Milton-next-Sittingbourne, Kent. *Urnæ*, in which the Romans were accustomed to place the ashes of the dead, were turned up. Large masses of concrete, evidently the bed of a furnace; masonry, which bore evidences of exposure to intense heat; lumps of "clinker," and iron nails were found, as well as fragments of funeral urns and calcined bones.

The Railway Bridge in Ludgate-hill.—Sir: What do you say to covering this ugly bridge, all over its entire height and length on both sides, with rich mirrors? The *coup d'œil* would be magnificent and grand in the extreme. These sheets of glass could be easily cleaned, and could be insured against accidental and wilful damage.—J. B.

Chelsea Old Church.—The incumbent of this quaint old structure is seeking aid to enable him to put it into a decent condition. It has many interesting associations, and with its two side chapels, built by Sir Thomas More and Sir Thomas Lawrence, and monuments to the ancestors of the Duke of Northumberland, Lord Derby, Lord Dacre, Lady Cheyne, and others, makes a strong claim for proper sustentation.

Sewers in Kensington.—The Kensington vestry have considered the following tenders for the construction of 260 ft. of 3 ft. 9 in. by 2 ft. 6 in. sewer, air-shaft, &c., in Pembroke-gardens, Kensington. Messrs. Thirst & Co., Norman-street, Chelsea (accepted), 199*l.*; Mr. Geo. George, Cambridge-road, Kilburn, 210*l.* 10s.; Mr. Wigmore, Walham-green, 199*l.* 10s.; Messrs. J. & S. Williams, Shepherd's-bush, 210*l.*

Proposed Monument for India.—A monument to the late Lord Mayo is to be erected in Calcutta, and 20,000*l.* have already been subscribed for the purpose. It is to be hoped proper care and knowledge will be brought to bear on the selection of the artist and the design. We spend large sums on monuments; on how many of them will posterity concern itself.

Architectural and Antiquarian Books.—The library of the Rev. Robert Willis, F.R.S., is to be sold by Messrs. Hodgson, commencing on Monday, the 8th instant. It includes books interesting to the majority of our readers.

Cost of Steam-Rollers.—Messrs. Aveling & Porter, of Rochester, in answer to an inquiry from the Kensington vestry, whether they allowed discount for ready cash for the steam-roller lately supplied by them, state their inability to do so, adding that the rise in iron had necessitated an increase of 10 per cent. They added, further, that they were now quoting 605*l.* for the rollers sold at 530*l.*, and observed that this increase in price did not cover the increase of cost to them. The vestry referred the question to the Finance Committee.

TENDERS

For the erection of warehouse, &c., in Charterhouse-street, for Messrs. Reynolds & Son. Mr. L. H. Isaacs, architect. Quantities by Mr. Riddett:—

Patman & Fotheringham	£11,895	0	0
Rider	11,880	0	0
Macey	11,750	0	0
Axford	11,675	0	0
Browne & Robinson	11,365	0	0
King & Son	11,260	0	0
Scrivener & White	10,978	0	0
Killby	10,932	0	0

For alterations and additions to Tower House, Wandsworth, for Mr. Seaman. (Second estimate.) Mr. T. H. Vernon, architect. Quantities supplied by Messrs. Mann & Saunders:—

Parsons	£3,525	0	0
Fish	3,395	0	0
Sprake	3,383	0	0
Scrivener & White	3,319	0	0
Stimpson & Co.	3,286	0	0
Adamson	3,078	0	0

For the erection of warehouse in Monkwell-street. Mr. B. Tabberer, architect:—

Palmer & Son	£3,085	0	0
Ashby & Sons	2,997	0	0
Robinson	2,980	0	0
Turner & Sons	2,979	0	0
Brass	2,893	0	0
Pritchard	2,854	0	0
Browne & Robinson	2,746	0	0
Perry, Brothers	2,737	0	0
Henshaw	2,620	0	0
Mark	2,600	0	0
Merritt & Ashby	2,570	0	0

For new Baptist Chapel, at Barnet. Mr. W. A. Dixon, architect. Quantities supplied:—

High	£2,820	0	0
Wood	2,650	0	0
Carter	2,565	0	0
Eaton & Chapman	2,500	0	0
Dove, Brothers	2,440	0	0
Scrivener & White	2,410	0	0
Wicks, Bangs, & Co.	2,348	0	0
Mann	2,345	0	0
Manley & Rogers	2,342	0	0

For a new villa, at Hornsey, for Mr. S. W. Francis. Messrs. Lander & Bedells, architects. Quantities supplied:—

Hill & Son	£2,720	0	0
Richards	2,650	0	0
Henshaw	2,620	0	0
Macey	2,620	0	0
Patman & Fotheringham	2,578	0	0
Browne & Robinson	2,576	0	0
Brown	2,567	0	0
Williams & Son	2,547	0	0
Mann	2,543	0	0
Axford	2,509	0	0
Scrivener & White	2,506	0	0
Grover	2,475	0	0

For main sewerage works, at Sale. Contracts 8, 9, and 10. Mr. A. G. McBeath, engineer:—

Jeffreys	£2,494	0	0
Bennison & Spencer	2,366	12	0
W. & J. Worthington	2,360	0	6
Carlisle	2,350	0	6
Hannett (accepted)	2,221	9	0

For the erection of house and school, at Llydiart-y-waun, in the parish of Llandinam, Montgomeryshire, for the Llandinam School Board. Messrs. Powell & Swettenham, architects:—

Thomas	£1,560	0	0
Turner	1,366	18	1
Trow & Son	1,300	0	0
Atkinson & Mason	1,220	0	0
Davies & Son (accepted)	897	10	0
Williams (withdrawn)	880	0	0

For erection of new vicarage-house, at Newbarns, Barrow-in-Furness, for the Building Committee. Messrs. E. Habershon & Brock, architects:—

Woodhouse & Son	£2,000	0	0
Garden	1,800	0	0
Gradwell	1,480	0	0

For Wesleyan Methodist School Chapel, Latham-street, Little Bolton. Mr. Thos. Ormrod, architect. Quantities not supplied:—

Townson (revised estimate accepted)	£530	0	0

For dwelling-house and boarding-school, Bradford-street, Haulgh-Bolton. Mr. Thos. Ormrod, architect. Quantities supplied:—

Ellis	£1,258	10	0
Statham & Son	1,145	0	0
Townson	1,120	0	0
Thompson	1,075	0	0
Burrow & Son (accepted)	1,033	0	0

For farm buildings at Wemham Farm, near Marlborough, for the Marquis of Ailesbury. Mr. S. Overton, architect:—

Dyer	£995	0	0
Hoskings	989	0	0
Nightingale	913	0	0

For alterations to "Gothic Villa," Plumstead, Kent, for Mr. William Jackson. Mr. John Jeffkins, architect:—

Blake	£576	0	0
Vaughan	532	0	0
Lonergan	465	0	0

For entrance-lodge, Little Hevers Wood, Brasted, Kent, for Mr. A. Thorne. Mr. John Jeffkins, architect:—

Lonergan	£650	0	0
Gorrum	565	0	0
Durtnell	520	0	0

For alterations to the Boys' National Schools, Abergavenny:—

Moreland	£401	0	0
White	394	0	0
Foster, Brothers	380	0	0

For sundry alterations and additions to premises, 83, King's-road, Chelsea, for Mr. Humphrey. Mr. J. Bradbury, architect. Quantities supplied:—

Martin & Son	£329	0	0
Whittick	329	0	0
Sawyer	318	0	0

For additions to house, at Caterham, Surrey. Mr. R. Martin, architect. Quantities supplied by Mr. Frederick Sparrow:—

Langmead & Way	£1,125	0	0
Bridgman, Nuthall, & West	1,118	0	0
Ward	1,055	0	0
Jarrett	1,020	0	0
Symons (too late)	1,015	0	0
Smethurst	1,001	0	0
Taylor & Son	981	5	2

For the erection of a drill-hall, at Windsor, for Mr. Wilson. Mr. P. J. Byrne, architect:—

Nightingale	£522	0	0
Sturgus	505	0	0
Dover & Co.	505	0	0
Reavel*	495	0	0

* Accepted, in conjunction with Messrs. Braby & Co.

For additions to china manufactory, Eastwood, Hanley, for Mr. Wm. Stubbs. Messrs. R. Scrivener & Son, architects. Quantities supplied:—

Bowden	£2,050	0	0
Bailey	1,994	0	0
Ogden	1,855	0	0
Matthews	1,839	0	0
Barlow	1,810	0	0
Cooke (accepted)	1,754	0	0
Redfern, Brothers	1,590	0	0

For china works, Eastwood, Hanley, for Messrs. Powell & Bishop. Messrs. R. Scrivener & Son, architects. Quantities supplied:—

Bradbury	£2,055	0	0
Bowden	1,975	0	0
Bailey	1,925	0	0
Barlow	1,895	0	0
Cooke	1,836	0	0
Matthews (accepted)	1,793	0	0

For additions to Kingsbury House, for M[illegible] [illegible]aw-lings. Mr. E. Roberts, architect. Quantities [illegible] J. Thacker:—

Lawrence & Sons	£1,914	[illegible]	[illegible]
Scrivener & White	1,778	[illegible]	[illegible]
Little	1,698	[illegible]	[illegible]
Sapwell	1,670	[illegible]	[illegible]
Ebbs & Sons	1,437	[illegible]	[illegible]
Haynes	1,343	[illegible]	0

For repairs, alterations, and additions to No. 9, Rathbone-place, for Mr. J. B. Sly. Mr. J. Liddiard, architect:—

Thomas	£450	0	0
Williams	421	0	0
Wood	396	10	0
Temple & Foster	385	0	0
Lord	351	10	0

For new shop front and alterations at 22, South-street, for Mr. Conibeere:—

Ingram (accepted)	£183	10	0

For alterations and repairs at 34, George-street, for Mr. James:—

Ingram (accepted)	£109	10	0

For alterations, &c. to the "Volunteer" tavern, Upper Baker-street. Messrs. Bird & Walters, architects:—

Fox	£1,490	0	0
Scrivener & White	1,463	0	0
Batchelder	1,443	0	0
Williamson & Son	1,429	0	0
Brown	1,347	0	0
Nightingale	1,277	0	0
Higgs & Son	1,275	0	0
Parry	1,174	0	0

For building two warehouses at Wilderness-row. Mr. Collier, architect:—

Hart	£6,686	0	0
Crabb	6,589	0	0
Moore & Granger	6,525	0	0
Nightingale	6,484	0	0
Perry, Brothers	6,235	0	0
Merrit & Ashby	6,227	0	0
Sewell & Son	6,210	0	0
Morter	6,150	0	0
Elkington	6,065	0	0
Henshaw	5,975	0	0

For the erection of factory, chimney-shaft, &c. in Commercial-road, E., for Messrs. Frost, Brothers. Mr. Andrew Wilson, architect. Quantities supplied:—

Warskitt	£5,919	0	0
Jacobs	5,875	0	0
Whillier	5,683	0	0
Wicks, Bangs, & Co.	5,640	0	0
Wood	5,620	0	0
Perry & Co.	5,575	0	0
Morter	5,545	0	0
Ennor	5,474	0	0
Outhwaite	5,437	0	0
Killby	4,952	0	0

TO CORRESPONDENTS.

AVEBURY.—A long article on Avebury,—but not a plan of it,—will be found on page 727 of our volume for 1868. The plan, and maps of the Ordnance Survey, are spoken of in the article. There is a restored plan in Mr. Fergusson's book.

A Queriet (the two northern masses were designed by Inigo Jones. The two southern masses were chiefly designed by Sir Christopher Wren).—E. P. (send particulars of the design: materials, cost, &c.—C. R. C. (we have no doubt the Board of Works has authorised the surveyors to charge for inspecting the stages that were erected).—R. P. (nothing would be gained by such an arrangement o the stones, except the appearance of weakness).—T. R. (no right to project. Remedy by an action).—Messrs. P.—B. J.—R. S.—A. H.—Quercus.—A. W.—H. H. V.—G. R. R.—T. S.—Mr. W.—A Subscriber.—G. W.—J. D.—T. M.—W. W.—F. H.—R. P.—W. D.—T. R. M.—S. S. S.—T. P.—A. M. C.—G. T.—T. M.—A Carpenter.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

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A RESPECTABLE Married Man, General Hand in the Painting, Graining, Glazing, and Paperhanging Branches, seeks constant EMPLOYMENT, or would Take the Work of a Builder, Piecework. Could assist at bookkeeping, prepare estimates, &c.—Address, H. E. 40, Thornton-road, Ramsgate.

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A MASON, of good practical experience, seeks a RE-ENGAGEMENT as WORKING or GENERAL FOREMAN of WORKS. Aged 40.—Address, B. C. 7, Philip's-terrace, Edmund-street, Camberwell, London.

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A MASON, of twenty years' experience in Superintending Public Works, is open to TAKE BATH or other STONE WORK. Stone Work prepared in the country, fixed by estimate. High references.—Address, MASON, No. 56, Rounton-road, E.

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A WELL-EDUCATED Young Man, aged 20, who has served two years to a Builder, and a short time to an Undertaker, Auctioneer, House Agent, Valuer, &c. wishes for a SITUATION, in or near London, as IMPROVER, TIMEKEEPER, CASHIER, &c.—Address, S. R. Naphill, near High Wycombe, Bucks.

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AN [illegible]xperienced Builder [illegible]es for EMWORKS [illegible]ENT as GENERAL FO[illegible], or CLERK of [illegible]n, or elsewhere.—Apply to J. S. care of Messrs. Bridges, [illegible]wood, & Co. Solicitors, 23, Red Lion-square.

AN [illegible]erson, of very great experience, [illegible] SERVICES to a respectable Builder, at a moderate remu[illegible]. Has now [illegible]ed a Government contract for a Government Contractor.—Address, A. B. 53, Malvern-road, Dalston.

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A PERMANENT SITUATION WANTED, by a Gentleman, of twenty-one years' experience, thoroughly versed in architectural practice, and who can also take off quantities, and execute land surveying and levelling. Has a good knowledge of materials and prices.—No. 875, Office of "The Builder."

CONTRACTS—*Continued from p. ii.*

TENDERS WANTED, immediately, for the ERECTION of FOUR HOUSES, with Shops, at Rotherhithe.—For particulars apply to GEORGE STOOKE, Esq. Architect and Surveyor, Bloomfield Villa, 15, Silchester-road, Notting-hill, W.

TO CONTRACTORS and OTHERS.—The Society of Merchant Venturers of the City of Bristol are prepared to receive TENDERS for the ERECTION of TWO BLOCKS of HOUSES, to be erected in Jacob's Wells, Bristol, for 36 Residences for the Industrial Classes.

The drawings and specifications can be seen at the Architect's Offices, Mr. J. A. CLARK, 23, Broad-street, Bristol, until THURSDAY, the 25th day of APRIL next, on which day the Tenders are to be delivered at the Merchants' Hall, Marsh-street, Bristol, endorsed "Tender for Houses for the Industrial Classes."

The lowest or any Tender will not be necessarily accepted.

TO CONTRACTORS and OTHERS.—The Local Board for the District of Hornsey are prepared to receive TENDERS for WATERING the ROADS in their district from May 1st to October 1st, 1872. Any information can be obtained on application to the Surveyor, at the Offices of the Board, any morning between NINE and ELEVEN. The Board reserve to themselves the right to refuse all or any of the Tenders. Sealed Tenders, endorsed "Tender for Watering," should be sent to the Clerk, at the Offices of the Board, Southwood-lane, Highgate, N., on or before ELEVEN o'clock, on the 15th of APRIL, 1872.

WM. HAMMOND, Clerk.

TO BUILDERS.—TENDERS required for the COMPLETION of 33 HOUSES, at Peckham.—For particulars, apply to STANDING & MARTEN, Bourne Valley Wharf, Elms.

MELYN SCHOOLS, NEATH, GLAMORGANSHIRE.—Builders are invited to submit TENDERS for extensive SCHOOL-BUILDINGS, at the Melyn Works, for Messrs. Leach, Flower, & Co. The plans can be inspected at the Company's Offices, on and after WEDNESDAY, APRIL 10th. Quantities, upon which the Tenders are to be based, to be had of Mr. THACKER, Surveyor, 22, Montague-street, Russell-square, London, W.C. on payment of 1l. 1s. (to be returned on receipt of Tender). Tenders to be forwarded on or before the 20th of APRIL to the Architect, JOHN NORTON, Esq. 24, Old Bond-street, London, W. The Company do not bind themselves to accept the lowest Tender submitted.

The Builder.

VOL. XXX.—No. 1523.

Pressure on Foundations.

SUFFICIENCY of foundations, it is almost needless to say, is ever the first source of anxiety to the architect and builder. Nor is that anxiety unjustifiable. When it is required, as so often happens at the present day, to erect gigantic edifices on weak and treacherous soils, it may well tax the highest constructive skill to supplement the weakness of the natural foundation by such artificial preparations as shall enable it to sustain its massive and costly burden with safety.

Even in constructions of an ordinary character, the same remarks apply, though in less degree. The safety of a structure may be imperilled, or its cost unduly increased, according as its foundations are laid with insufficient stability, or with provision for security in excess of its requirements. When it is considered, therefore, that the precise conditions of safety are generally capable of being calculated with as much practical accuracy in this as in any other part of a construction, it is unpardonable that any liability to danger or loss should exist from the imperfect comprehension of a subject of such vital importance.

Yet it cannot be denied that there appears in many instances, much deficiency in the knowledge of the first principles which regulate this branch of the constructive art. The practice, not only of the workman, but of the otherwise educated architect, is often based upon empirical, rather than upon exact and scientific principles, so far as the laying of foundations is concerned. It may therefore be advisable to attempt to classify these principles in a somewhat systematic manner, so as to be available for convenient reference in the majority of cases occurring in practice.

The nature of the soil to be built upon is evidently the first object for consideration; and it is scarcely necessary to say, that soils vary in their strength or bearing-power as much as in their geological formation. They range from a soft or semi-fluid condition,—such as that of marsh, mud, or silt,—through all intermediate stages, to the condition of the hardest rock. The inherent strength of the soil itself, and the load to be sustained upon a given unit of its surface (which is usually taken in practice as a square foot), has accordingly in the first place to be considered.

Where the soil is incapable, from its inherent capacity of resistance to pressure, of sustaining the incumbent load of the structure to be placed directly above it, it is then the duty of the constructor either to increase its bearing power by artificial applications, which shall augment the strength of the bearing surface immediately under the superstructure to the required extent; or else, by widening the area of the foundations, to extend and enlarge the bearing surface to such a degree, that that surface shall contain within it the necessary resistance to pressure which the circumstances of the case require. The means by which these results are arrived at will form the second branch of the inquiry.

The materials commonly used for these purposes and the amount of bearing-power obtained by their use, will also require to be described.

Soils of a soft and even semi-fluid character are capable of being treated with great success, as regards the improvement of their capacity for sustaining structural weights. The well-known instance of carrying the original Liverpool and Manchester Railway over the Chat Moss is one of the most remarkable cases of this nature. The fluid moss along the intended line of railway was first thickened by throwing into it a quantity of earth, just as water is thickened into paste by the addition of flour. When the soil was thus improved, though still in a partial state of fluidity, it was covered by a broad and thick layer of fascines, which floated on the viscous soil like a raft upon water. Upon this the railway was formed; and the result amply justified the marvellous foresight of the great engineer who introduced the railway system into England.

On reviewing this operation, it will be seen that a double process contributed to the successful result. As the original soil nearly approached to the fluidity of water, it might be assumed to be incapable (or nearly so) of carrying *any* superstructural weight. The first operation, therefore, was to increase the solidity of the soil by the addition of a more solid material, which, commingling with it, should impart to it a certain amount of sustaining power. This having been effected, the next operation was to cover the improved soil with layers of fascines of such a breadth that the surface which they covered should contain an inherent bearing-power sufficient to sustain the weight of the railway and the trains. It then became a safe operation to lay the railway on the fascines.

This leads us to the principle on which the bearing-power of all soils should be calculated. Every soil is capable, as above mentioned, of sustaining a certain weight upon each unit of its surface, which varies in a scale proportionate to the solidity of the soil. The bearing-power of a soil approaching in fluidity to water itself may be assumed, as above mentioned, at zero, or the lowest point in the scale; and the bearing-power of the hard rocks may be assumed as the highest; and if these bearing-powers be taken at from 0 to 30 tons per square foot, it will be sufficiently accurate for practical purposes. Between these extremes lie all the intermediate soils of weak rocks, shale, gravel, sand, clay, loam, silt, &c.; with the varying degrees of bearing-power inherent in each. Supposing, therefore, that the soil is capable of bearing a pressure of three tons per square foot with security, it follows, of course, that either one square foot of foundation must be provided for each three tons weight in the entire structure; or, if this be impracticable, that the bearing-power of the soil must be increased by such means (piling, for instance), as will bring it to the requisite standard of sustaining force.

The first operation, therefore, is to ascertain the weight of the structure. This is done, it is hardly needed to say, by calculating the cubical quantities of the whole of the various materials in the structure, and ascertaining from thence the exact weights which will come upon the foundation. If these weights be not equally distributed, care must, of course, be taken to ascertain the proportion of that weight carried on each part of the foundations, and of proportioning the area of that part accordingly. Suppose, for instance, that in a warehouse the floor-joists run from back to front; it is then evident that the back and front walls only will carry the weight of the floors and of the goods placed upon them, which will render it necessary to strengthen correspondingly the foundations of the front and back walls above those of the sides. Again, suppose a shop-front to be carried on an arch, or a girder having its bearings on piers at each end of the building, it is manifest that the weight of the whole superincumbent structure, instead of being distributed equally along the front wall, will be carried on the end piers only, the foundations of which should be made of a suitable capacity.

The weight on the foundations, so calculated, should also include all extraneous loading which may be incidental to the structure. Thus, in a bridge, the foundations of the piers should include, not only the weight of the materials of the pier itself, but that of the girder or arch, with all the supplemental parts which compose the superstructure of the bridge; and also the extraneous loading which comes upon the bridge; the whole being, of course, ultimately supported on the pier foundations. This extraneous loading varies in amount according to the nature of the structure, and can generally be ascertained beforehand with tolerable accuracy. Thus in a railway-bridge it is usual to calculate the weight of the trains at from 1 ton to 1½ ton per foot run, for each single line of railway. On a road bridge, the usual load assumed is from one half cwt. to one cwt. per superficial foot; the load of a crowd of persons standing as close together as practicable having been ascertained by many experiments to be a little more than three-quarters of a hundred weight per square foot. In a warehouse the weight on the floors should be ascertained in each case, as it varies according to the nature and quantity of the goods which it is required to store; about four or five cwt. per square foot, being, perhaps, an average amount. In ordinary floors, the weight may be safely assumed as similar to that on a road bridge; it being understood in both these cases, that the effect of a crowd of persons in motion considerably increases the strain on the structure, for which reason a load of 1 cwt. per square foot is more frequently assumed in practice as a safe amount.

The weights on the foundations having been thus ascertained, and proportioned to each part of the structure, it is then necessary for the constructor to determine the number of tons pressure per square foot, which he will put upon the soil on which the building is erected. In this respect it is curious to observe what great variety appears to exist in the practice of the most eminent engineers. Take, for instance, the pressure of foundations in solid London clay, which possesses, perhaps, a greater amount of uniformity of bearing-power than any other soil ordinarily met with; and it is on record that the greatest engineers of the present day have varied no less than from 1 to 8 tons per square foot in the pressure which they allowed to be placed on the foundations of structures of the highest importance on London clay. In general, however, it may be stated that this soil will compress to a considerable extent, though with tolerable uniformity, under greater pressures than 6 tons, and about 4 tons per square foot is recommended in practice as a safe pressure upon stiff clay; the foundations being presumed to be laid at such a depth as to be unaffected by the weather, or by any external cause, such as that of water settling in them which will soften the soil on which they rest; or of deep excavations being made in their immediate vicinity, which will allow the clay under pressure to escape or ooze away from beneath the building.

The weaker descriptions of clay soils, such as loam, for instance, and also the stronger description, such as indurated clay or shale, as well as soils of similar strength, such as chalk, &c., vary in bearing-power in degrees which it is impossible here to indicate, and the practical judgment of the constructor will determine in each case the amount of pressure they can be trusted to sustain.

The beds of solid gravel which overlie the London clay in many places, and are of common occurrence elsewhere, form, when of sufficient

thickness and uniformity, one of the firmest and most unyielding of the ordinary soils. They may safely, under these circumstances, be loaded with double the pressure which can be put upon London clay with safety. Where they occur but casually, however, or in thin and partial beds, it is preferable to carry the foundations through them till a uniform soil is reached; as otherwise they may give rise to unequal settlement and to damage to the structure in consequence.

The soils of sand will be next considered. They vary from a compact close sand with a clayey bind perfectly impervious to water (which is found in the bed of the Thames and elsewhere), through all conceivable varieties of coarseness, looseness, and porosity. Porous sand soils, as a rule, are unaffected by stagnant water, but easily capable of removal by water in motion, and they require extreme care at the constructor's hands where there is any probability of the latter occurring. In this case, the only course is to lay the foundations so deep that there shall be no probability of their being laid bare by the scouring power of the current. Perhaps the most difficult of all engineering work is the foundation of bridge piers in a deep soil of this nature which is subject to the action of running water in a river; and the contrivances adopted in such cases for securing the foundations present the most interesting examples known to us of modern engineering resources.

Up to a comparatively recent date, the means adopted in cases of this kind have been usually the erection of coffer-dams round the space to be occupied by the foundation of the pier; and if a solid soil could thus be reached within a moderate depth, the operation, though costly, became one of tolerable certainty. The piles forming the coffer-dam being driven into the solid soil, the inside was pumped dry and the loose material within the dam was removed, when the foundations were laid as on dry land. Where, however, from the porosity of the subsoil it was impracticable to remove all water from the interior of the dam, concrete made with hydraulic lime or cement was deposited in the bottom and raised till it reached the level of the lowest water-surface, when the building of the pier was continued upwards in masonry or brickwork till the level of the bearing of the superstructure was attained. It sometimes happened, however, that a solid bottom was unattainable by any of these means; in which case the usual course was to drive long piles all over the foundation surface, over which the concrete or masonry foundations (as the case might be) were laid; this process increasing to a large extent the bearing powers of the soil, even in cases where the piling failed to reach more solid strata. The piles forming the coffer-dam were cut off below the lowest water-level, instead of being wholly removed; the underground portion of them thus forming an additional protection to the pier foundations against the effects of the current.

It is evident that in this case the natural sustaining force of the lowest soil reached must be the measure of the pressure to be allowed on the foundation area of the structure; except in the case of piling as above mentioned, where the friction on the sides of the piles, as well as the resistance of their points or lower ends to sinking under the superincumbent weight, increased the sustaining power of the soil. We will carry on the subject in our next.

THE WARWICKSHIRE MOVEMENT.

A novel feature has recently appeared in the developments of our social progress. For good or for evil, a certain disintegration of classes, or rather of class organisations, has for some time attracted the attention of thoughtful men, as one of the most significant characteristics of the day. The number of trade-unions, strictly so called, has within the past few weeks been augmented by a union of agricultural labourers. The fact is one of no ordinary importance. We do not propose to follow the lead of some of our contemporaries, and read to the rural labourer a homily on the blessedness of his lot, and the crying sin of ingratitude. Still less do we mean to excite the working population by expectations that can never be fulfilled. We wish to look at a great national phenomenon in the clear light of historic impartiality. A great evil in all political discussions is the absence of dispassionate investigation. Public speakers and public writers are but too apt to treat imperial questions from the very narrowest standpoint of class or of party views. A certain balance may result from the pitting of advocate against advocate. But that result rather resembles the oscillations of the pendulum than the stability of a well-poised structure. When all are more or less advocates, the tenure of the scales of justice is committed to blind chance, or to the no-less blind decision of an ephemeral majority of voices. Unless more of the judicial spirit, and less of that of the special pleader become developed among our public men, we cannot but anticipate bad consequences.

Great organic changes in national condition may be effected in two very different ways. They are either the natural consequences of growth, whether in number, extent of territory, or the physical or intellectual improvement of a people, or they are the result of legislation; or it may be said, they are either the causes or the consequences of a change of laws. In the former case, this change is gradual, often almost imperceptible,—always irresistible. Such, for instance, was the gradual change with regard to the right to dispose of property by will that developed itself in the history of Rome. Very often, in such cases, the letter of the ancient law, if indeed it be written, remains intact, while the spirit of the innovation has deprived that venerable form of its original efficacy. At other times, a law, admitted to be effete, is by common consent removed from the statute-book. This silent and necessary change in the laws of a people, a phenomenon resembling the organic growth and change of a living being, is that which accompanies the vigorous growth and full maturity of races. It is uninitiated by party or personal selfishness; and as it is the result of actual change, and not the effect of a mere vague wish to better matters, it is unattended by convulsion or misfortune. In the ancient world, and to this hour, among Semitic and Turanian races, the hatred of innovation is the strongest bond of the social system.

On the other hand, we see, especially among the Aryan nations, and most notably in France during the past century, the rapid and gigantic development of the opposite method,—a development that has had a prodigious influence on our own national condition. This method may be called the attempted application of the logical principle to politics. But, unfortunately, it is applied after the fashion of the scholiasts and commentators of the Middle Ages, rather than after that of the earlier inductive philosophers.

It has been impossible for any writer whose thoughts are occupied with the political future of this country (using the word in its high and proper sense), to doubt that the time must come when the agricultural labourer would experience the influences of that great revolution which is stirring the very framework of society. It was a point on which, however, wisdom and patriotism prescribed a watchful silence. It is easy to fire a rick; it is very hard to put out the flame. The rural population has been almost left out of all calculation by party legislators. The rustic was thought to be *adscriptus glebæ*.

The old-fashioned farmhouse, where the hinds congregated at night-fall in the capacious kitchen, where the farmer headed the board and his wife regulated the sufficient food, drink, and lodging of the humbler members of one great family, is no more. The labourer is driven to his cot, and told to live on his wages. Hence, as a natural consequence, he marries before he is well out of his teens. Poverty comes on him armed, with his rapidly increasing family. Boys and girls are over-weighted with more boys and girls not a score years their junior. Nor is poverty the worst of it. All the gentle influences of unconscious education, whether of the ploughboy by the farmer's children, of the men by their masters, of the women and girls by their mistresses, of the youth or maiden of gentle blood by the nobleman's castle, are passed, gone out of date. Hence the yearly increasing savageness that marks the manners of many. Hence, in some measure, the want of earnestness and of realism often evinced by the higher classes. Hence the spread, to our remotest villages, of the pestilential fashions set by the *demi-monde* of Paris; and the disappearance from our island of our once unrivalled domestic servants.

The question now arising in Warwickshire is but one of the natural results of this state of things. Society has left each class to take care of itself. Volunteer teachers have loudly insisted on the inauguration of the reign of what the Americans call the almighty dollar. The farmer, the tradesman, the artizan, is each a different man from his grandfather. Luxury of living, of which the latter would have been ashamed, is now an every-day thing. The bond with the labourer is loosed; and the labourer is looking at the matter, at last, from his own point of view. He may not exactly appreciate the position, but who is to blame for forcing him into it? The state of the matter is this. That which the opponents of all education, all culture, all change, predicted, is coming to pass. It was inevitable that such should be the case unless due precaution were taken. The hands of the clock cannot be stopped without stopping the entire mechanism. That a rural labourer, if educated, will not be content to remain in the position of an uneducated rural labourer, is obvious to the simplest capacity. The natural remedy suggested by the blind—"Don't educate," is out of the question. We need not discuss its absurdity, because it is one of the things that are at an end. We have to see how the new state of things must be dealt with. The social movement, by virtue of which each class or craft of Englishmen is now seeking how to benefit itself, as a class, has at last reached the agricultural labourer. Rightly or wrongly (we are forced to say rightly), they are discontented with their condition. They have heard what is going on elsewhere, and they are attempting a movement of their own. It will be remarked that this movement originates, not among the most helpless and abject, but among the best paid and most comfortable of this class of peasantry. It must further be remarked, that the movement originates—not in consequence of, but at the same time with, the introduction of a great revolution in our entire agricultural system. The ploughman now may be regarded as in a position similar to that held by the scribe, or copyist, at the date of the invention of printing; to that of the weaver at the time of the invention of the power-loom; to that of the stage-coach proprietor at the time of the invention of railways.

This coincidence has a double effect. On the one hand, the substitution of steam power for manual labour may be looked on as a means of making the farmer, to a certain extent, independent of the labourer. On the other hand, all experience leads us to anticipate that the performance of a large quantity of heavy work by steam power, will not only set free a certain amount of rude labour, but will further cause a demand for a much larger amount of labour of a more skilled kind. For one man who is no longer required to thrash, to winnow, or to pitch trusses of hay or straw, three men will be required for the performance of those duties which no machine can discharge. Brute power is no longer looked for from the labourer. Three times as much of skilled labour will be asked at his hands.

Such, then, we take to be the actual state of things, regarded from that point of view which will, hereafter, be taken by the historian. What is the practical outcome? A word of counsel to both farmer and labourer.

We would ask the farmer to put a home question or two to himself. Does he remember his grandfather's time? How is he, himself, now dressed, and mounted, and fed, and amused, in comparison with his father in his boyish days? How do the occupations of his wife and daughters compare with those of his mother and aunts? And, at the same time, what is the change in the condition of his labourer? Let those to whom such a comparison suggests disagreeable ideas remember how far they are accountable, in the court of conscience, for dealing between man and man. Any progress that is marked by an increasing divergence in the comfort and welfare of classes that are really interdependent, is, disguise it as we may, only progress to destruction.

Again, from a low, but yet solid, point of view, let the money question be regarded. Science now offers to the agriculturist the means of increasing his returns to an extent altogether disproportionate to that increase of outlay which she counsels him to incur. We stated some time ago,* that the average return of the cultivated land in the kingdom is taken at 75s. per acre. From poor land at Tiptree, Mr. Mechi has raised crops, in animal and vegetable produce, to the value of 230s. per acre. The average amount spent in labour throughout the country is stated at 15s. per acre. Mr. Mechi's outlay is, including interest on money sunk in improvements, 56s. per acre. If we take the total acreage under all kinds of crops in Great Britain (which have increased by half a million of acres in the past

* See *Builder*, No. 1409, p. 837, and No. 1485, p. 460.

year), we then find the actual outlay on agricultural labour to amount to about 35,000,000*l.* sterling, while there is room for an application of labour to the amount of 130,000,000*l.* sterling, with the result of trebling, not the outlay, but the income! This is what lies before the farmer; but it is to be attained, not by killing the goose—not by compelling labour to emigrate—but by such an intelligent and kindly combination of machinery and labour—of steam power and human agency—as is impossible in the absence of a well-housed, well-fed, thriving, happy peasantry.

To the farmer, then, we say,—As a man of sense, meet the wants of your labourers as far as you can; and, whatever else you do, meet them at all events as A MAN. Let the kindly feeling that should exist between the elder and the younger sons of the same soil not be allowed to disappear.

To the labourer, on the other hand, we have a word of advice. All good men, all wise men, all your true friends, wish to see your position improved,—nay, more, they will most rejoice if this improvement is your own work. But do not be misled by extravagant statements. You can only live and thrive, in England, as part of one great agricultural family. You cannot extort, at the point of the pitchfork, more than the farmer can actually afford to pay. Discuss the matter fairly and moderately. Wages are not matters of taste or of fancy; they are elements of the cost of production. It is only by making it worth the while of the farmer to throw capital, energy, and whole-hearted industry into his pursuit, that either you or he can thrive. True, there are backwoods enough to which you may emigrate,—broad forests, damp swamps, rocky mountains, and the like, which, some time or other, by the intelligent application of immense labour, will be laughing fields of plenty. But hard labour is necessary there, as well as here. There is great question how far any of you can better yourselves by trying an unknown country, soil, and climate. One thing is pretty sure, you will get on nowhere without industry, good conduct, and intelligence. Let these be your characteristics at home. Let whatever the schoolmaster brings be added to the sterling qualities in her sons that have made Old England what she is; and your new country will be found at home,—found in such a paradise as earth would never excel, if the agriculturists of England would only do justice to her soil.

LEASES *v.* YEARLY AGREEMENTS.*

IT may seem, at first sight, that I am to some extent retreading the ground already traversed by Mr. Squarey, in his paper read before this institution two years ago, entitled "Farming Covenants." Mr. Squarey limited his remarks on that occasion to "the consideration (to quote his own words) of the principles which should govern farming covenants;" and although, in the resulting discussion, I am aware that reference was made incidentally to the relative advantages of leases and yearly agreements, the question which I venture to bring under your notice to-night was not touched upon in the paper itself.

My attention has, for some years past, been more or less directed, in my own practice, to the question of leases and agreements, but especially so in connexion with an essay written by me for the Royal Agricultural Society, and to which I need not more particularly refer.

I may candidly admit, in starting, that I am a convert to the opinion that an annual tenancy, regulated by a wise and liberal agreement, unencumbered by numerous or vexatious conditions, is to be preferred to a lease, whether regard be had to the interest of the landlord or of the tenant. This conviction, however, will not influence me, I trust, in my endeavour to set forth with fairness the advantages and disadvantages, as I conceive them, of both leases and yearly agreements; nor lead me into any of those involuntary misrepresentations of fact into which the most impartial person may fall, when under the influence of strong convictions either in one direction or the other.

I may premise that I shall not venture in this paper—neither do I think it possible to do so—to lay down any fixed rule for the determination of the kind of tenancy which shall be the best in all cases. Peculiarities of soil, the different circumstances under which farms are let, the personal habits and dispositions of both owners and occupiers, are so various that no general principle can be asserted as the best in all cases. It will be sufficient for my purpose if I can pave the way, by a careful setting forth of *pro* and *con.*, for the determination by others more able than myself of some rule which will serve to regulate a *majority* of cases.

It may assist us in arriving at a just conclusion if we consider for a moment the true position of landlord and tenant, as such.

The landlord has land which he cannot or does not wish to farm himself; the tenant, on the other hand, has no land, but is endowed with certain capital and skill which he is ready to employ in its cultivation. The requirements of both parties, therefore, induce to an arrangement of the basis of mutual benefit. So far the matter is clear; but in proceeding to make an arrangement of the kind, we are at once confronted by the fact that the interests of the two are not on all points identical, and hence arises the necessity for an agreement.

Abstractedly considered, the tenant is, in the very outset, in a position of some disadvantage, being in many cases compelled, by the competition for holdings, to accept conditions from the landlord under his agreement which, were the position of the two parties to the transaction absolutely similar, he might decline. The landlord practically dictates his own terms, which the tenant accepts or not, as he chooses,—the only restriction upon the landlord, in this respect, being the necessity for letting his land and living by his rents, a restriction which, under a system of excessive competition for holdings, is nearly inoperative.

This inequality of conditions may, in years gone by, when the processes of agriculture were very much less complex, have operated without any particular detriment to the interests of either party.

In those days the system of farming was very different. There were no artificial manures, cake, and corn used,—or, at all events, very little,—and the landlord had to stipulate that his land should not be injured by the unnecessary removal of its mineral or staple constituents,—the guiding principle of farming being, not the improvement, but the maintenance of the land in its then present condition.

Under the modern system of agriculture, all this is changed. The tenant, no longer a maintainer but an improver,—and having, since the restrictions on the import trade were abolished, to compete with the world,—is compelled to leave the beaten track, and avail himself of all the aids to increased production which modern science has placed at his command. It is natural, under these circumstances, that he should seek some form of arrangement less hazardous to his interests than was formerly sufficient.

The landlord, moreover, perceiving the probable benefit to his land, may be conceived as being, on his part, desirous of meeting with an improving tenant; and thus the inequality of the conditions under which the parties treat, and to which I have before alluded, may be to some extent redressed. The landlord, however, is anxious to decide to what extent he can, in justice to his own interest, meet the tenant's wishes. In endeavouring to decide this question, it is necessary to look at *both* interests, and determine, if we can, the exact relation in which they stand to each other.

Before I proceed to do so, I may premise that, in modern farming, the land may be considered a mere manufactory for the conversion of the water and the gases of the atmosphere into corn and meat; and it is to these sources that the farmer must look mainly for his profit,—having to return to the land more mineral constituents than he takes from it, and often, in the case of corn, at a higher price than he sells it at.

The land, according to this view, is a machine which it is necessary to keep oiled and in the best possible state by draining, manuring, and—a fact of primary importance—in such a mechanical condition as to admit of the free penetration of the air, without which both water and manure will fail to act.

This being so, we, as land agents, are looked to by landlords to protect their interests, and shall do so most effectively by giving the tenants every facility for managing the land according to the principles of husbandry which modern science has proved to be the best.

While on this branch of my subject, I may venture to observe that the difference between a good and a bad farmer is rarely, if ever, fully appreciated. Regard is seldom had to the fact that, in the case of a good farmer, who uses a great deal of corn and manure every year, the producing power of the land increases annually at something like the rate of compound interest.

Suppose, for instance, that the good tenant in question grows the first year, by the use of manure, an extra 10 cwt. of straw, or 10 tons of roots; the next year he has the manure made up from these extra crops (provided, of course, that they are not sold off the farm) in addition to the manure he may purchase. He has thus the means of obtaining a still larger crop the next year, without an increased rate of outlay.

This rate of increase is maintained year by year, to the manifest advantage, not only of the tenant, but ultimately of the landlord also.

The bad tenant, on the contrary, who farms from hand to mouth, as it were, does nothing more than maintain his land in its then condition, whatever that may happen to be, and not unfrequently fails in doing even that.

I will now proceed to lay before you, as concisely as I can, what I conceive to be the advantages and disadvantages of a lease to the landlord and the tenant, adding thereto such remarks as may occur to me under each head.

The following order of consideration will be most convenient:—

1st. A lease: its advantages to the landlord.
2nd. " its advantages to the tenant.
3rd. " its disadvantages to the landlord.
4th. " its disadvantages to the tenant.

The Advantages of a Lease to the Landlord.

1. *It secures a good tenant for a term of years.* Every one will agree that this is a most desirable object, and that no trifles should be suffered to stand in the way of its attainment.

2. *It generally insures an increased rental at the commencement of a term.* This fact has sometimes been overlooked in the discussions of this question which have taken place here and elsewhere. My experience seems to show me that leases, whether for short or long periods, are upon renewal accompanied by an increased rental,—a circumstance explained by the fact that the tenant is in the position of an applicant for a continuance of the occupation.

3. *It saves the investment of the landlord's capital in improvements; while it often happens that he resumes possession, from some cause or other, before the end of the lease, and reaps the benefit of the tenant's improvements.* Many estates are so embarrassed that leases are granted for the express purpose of inducing tenants with capital at their command to improve the land. This case is met, no doubt, to some extent, by the Land Improvement Act, as well as by several private Acts of Parliament in the hands of companies, but it is not of unfrequent occurrence.

4. *It is a means of inducing tenants with capital to invest their money freely.* Very few men of capital care to take a farm out of condition without security of some kind to enable them to recover their outlay upon improvements.

5. *It saves the landlord, who does not employ an agent, the trouble of repairs and other matters incidental to yearly tenancies.* I have met with many instances where leases of detached farms were granted with this object.

These are, as far as I am aware, the leading features of advantage attaching to a lease, as regards the landlord.

I will now advert to

The Advantages of a Lease to the Tenant.

1. *It is a security that he will have an opportunity of getting back the money he may invest in improving the land.*

2. *It secures him a farm for a fixed number of years,*—a great consideration, if the farm be a good one and the rent moderate.

3. *It enables him to do anything he may require in the way of improvements,*—a fact of great importance to a tenant with capital which he is willing to expend in that way, and under a non-improving landlord.

4. *It secures him in his farming operations from undue interference on the part of the landlord, and affords him more general independence.*

In many cases owners, having let their farms on lease, trouble themselves no more about them until the expiration of the term (a circumstance of some importance to a tenant who is disposed to try improved methods of cultivation, which might otherwise be resisted by the landlord).

Now let us turn to the reverse of the question, and summarise, as briefly as possible, the leading

* By Mr. Clement Cadle. Read at the Ordinary General Meeting of the Institution of Surveyors, April 8th, 1872, Mr. Richard Hall, President, in the chair.

objections to a lease, as far as the landlord's interest is concerned.

The Disadvantages of a Lease to the Landlord.

1. *It alienates the land from his possession for a number of years.* With many landlords this is an important consideration, especially in cases where they reside on the estate.

2. *It hampers him if he wishes to sell, effect an exchange, or carry out improvements.* This is often an inconvenience of a serious kind to the landlord, who not unfrequently, having once experienced a difficulty of the kind, becomes unreasonably adverse to all leases.

3. *It prevents him from getting rid of a bad or undesirable tenant.* This is probably the most serious of all the drawbacks to a lease. Of course, in the great majority of cases the force of the objection lies in the incompetence or the poverty of the tenant; but instances are not rare in which tenants have been known to take farms for the express purpose of rendering themselves so obnoxious to the landlord as to induce him to buy them out on their own terms. Others, from some disagreement with the landlord or his agent, deliberately set themselves to oppose his wishes and interests in every possible way.

4. *It lessens to a certain extent the general or local importance which land confirms upon its possessor, by diminishing his power and influence over his tenantry.* The social value of this influence is very fairly measured by the low rate of interest which many persons who purchase land are willing to make out of their money.

I will now set forth

The Disadvantages of a Lease to the Tenant.

1. *It invariably results in an increased rent when the time comes for its renewal.* This rule is almost without exception; and it will be found, I believe, that in districts where leases are customary, the rental of the land ranges higher than where annual tenancies prevail.

2. *It precludes him from getting rid of a farm which he may find too dear, or which may prove to be unsuitable.* I have known instances in which tenants have actually sought a declaration of bankruptcy, and have gone to prison, in order to get rid of a lease.

3. *It often involves, in case of death, the loss to his family of the money expended in improvements, from the inability of the survivors to carry on the lease.* Many leases contain, as you are aware, a provision that a tenant is not to part with possession, or that in case of death the lease is void. In such a case a lease, so far from being an advantage to the tenant and his family, is often a downright misfortune.

4. *It often induces a tenant to spend money upon improvements which should more properly fall upon the landlord.* Instances are numerous where tenants, with a very imperfect knowledge of the capabilities of their farms, commence at once to spend money on improvements which, with a few years' experience of their holdings, they would leave to the landlord, as requiring a longer period than that included in the lease to give an adequate return for the outlay.

Thus far I have summarised the advantages and disadvantages to both landlord and tenant arising from ordinary leases and agreements.

I will now venture to place before you, for the purpose of discussion, the question of compensation, or, as it is ordinarily called (I think erroneously) "tenant-right," submitting it to your judgment to decide what amount of advantage, or the contrary, to both parties, the adoption of the principle would entail.

I take exception to the term "tenant-right," on the ground that it is not clear whether such compensation is not really more in favour of the landlord than the tenant. The tenant who feels that, whenever he leaves his farm, he will be fully compensated for the unexhausted improvements, has no hesitation in continuing to spend his money in effecting them.

We have to bear in mind that while a tenant continues in a farm he is every year (in effect) an outgoing and incoming tenant, and that whatever improvements he makes he does so in the expectation of reaping benefit in the future. His position in this respect is the same if at the end of any particular year another man is incomer instead of himself, and hence it is far better (in the interest of all parties) for the new tenant to pay in money for the unexhausted improvements of his predecessor than for the outgoer to have the trouble of exhausting the land, while his successor, in the end, probably expends a much larger sum in bringing the land back into condition than would represent a fair compensation to the outgoer in the first instance.

I have seen many instances in point, and it is difficult for any one, without experience of the kind, to realise the trouble and expense of restoring to a proper state a farm which has been left in a foul and bad condition, to say nothing of the loss in rent and profit in the meantime. My experience teaches me that it is far better for a tenant to take to a farm in good condition, no matter what (in reason) may be the cost of doing so, in the shape of compensation to his predecessor.

Let us look at it from a landlord's point of view. Under present circumstances the landlord, with a farm to let, finds it (even at the end of a lease), in its worst possible appearance, and sends his valuer to look at it when it is in that state. Now, it is patent to every gentleman present, who is a valuer, that it requires considerable knowledge and experience to determine whether a farm is naturally poor, or has been made so by over-cropping. We know that it is not every one who values a farm who is possessed of that nice tact and discrimination necessary for the estimation within 1s. per acre of what a tenant should pay. It is manifest, therefore, that the better the condition of the land at the expiration of the tenancy the better will it be for the landlord.

For this reason (and owing to the periodical running down of the land before alluded to), I have no hesitation in saying that the landlord is more interested in a good system of compensation than the tenant. The latter does, no doubt, in some cases, obtain his farm cheaper under such circumstances, and manage to get what is commonly called "his pull" out of the land before he leaves. Nevertheless, I maintain, as I have before shown, that a system of compensation for improvements would, in its results, have better answered the purpose of the tenant also.

A system of farming which had regard simply to the present crop, would neither be practicable nor remunerative. No one would think of putting on his land the manure necessary for one crop only; husbandry of that kind would be in direct defiance of every rule of modern agriculture. Thus the benefit of "bones" applied to the land is not fully exhausted for eight or ten years; farmyard manure for three or four years; consumption of corn and oil cake for two or three years (and often much more, especially on the pasture lands), and other things in proportion.

Is it likely, then, that the tenant will leave years of this unexhausted benefit to his successor without an effort to recover it in some way or other in defiance of agreements?

Agreements, no doubt, have their uses; but it is undeniable that an instance of perfect compliance with every clause, which an agreement may contain, might be looked for in vain. Personally, I have never met with an instance. Restriction clauses are made for bad tenants, not for good ones, and are useful, in as far as they enable the landlords to restrain tenants who are disposed to use the land improperly. I am convinced that the adoption of a well-considered system of compensating agreements would operate more beneficially in all directions than the most elaborate network of covenants and restriction clauses.

Under such a system the yearly tenant would enjoy much of the security of a lease, and expend his money freely in the improvement of the land; the property of the landlord would be maintained in continuously good condition; much of the spirit of scheming and evasion which is provoked under the present system, by a not unnatural desire on the part of the tenant to reap the fruit of his own enterprise, would be obviated, and a general feeling of confidence and mutual interest would be established.

I have endeavoured to show that a system of compensation is beneficial to both landlord and tenant, as applied to yearly tenancies; but I feel that it might also be introduced into leases; for the same arguments apply to the end of a lease as to the determination of a yearly tenancy; and, my opinion is, that this compensation should extend not merely to barely recouping the tenant his outlay, but to making it his interest to farm the land best at the end of the lease.

Before leaving this part of the subject, I will allude, for the sake of discussion, to the system (advocated by many) of giving two years' notice to quit. The only advantage of that system appears to be that, in the absence of a desire to run the farm out, the tenant thus secures a longer time in which to look out for another farm.

A NEW THEATRE IN SOUTH LONDON.

A new theatre, of large dimensions, to be called the "Imperial," is about to be erected on the Surrey side of the river, the locality being Newington Causeway, about midway between the Elephant and Castle and the Borough-road Stations of the London, Chatham, and Dover Railway. The principal entrance to the building, which has been designed by Mr. Albert Bridgeman, will adjoin the large wheelworks of Mr. E. H. Bayley. Architecturally, the new structure will be an ornamental feature amongst the surrounding buildings. The style of architecture adopted is an admixture of the French and Italian, the principal façade being about 40 ft. in width and 70 ft. in height, the elevation consisting of six stories. The materials used in the construction of the lower portion of the building will be polished granite, a colonnade extending across the entire width of the structure. The upper portions of the elevation will be of stone, with polished granite facings, surmounted by an ornamental pediment. The structure, from front to back, will be of great depth, extending to a distance of 300 ft. from the front to the rear, which will be in the Borough-road, where the stage will be approached. The interior of the building will mainly be appropriated to the auditorium and stage; but a considerable portion will be set apart for saloons and restaurants. These saloons will be in the front part of the building, each saloon being about 30 ft. by 50 ft., and connected with the pit and the several tiers of boxes, four in number. The auditorium sweep,—horse-shoe in form,—will be 75 ft. in length from the extreme back to the proscenium, and 66 ft. in width. A special feature in the auditorium arrangements is that the pit, as well as the boxes and gallery, will have an unusual fall in the direction of the stage, thus enabling the whole of the audience, in every part of the house, to have an easy and commanding view of the performances. The stage will be of large dimensions, occupying an area of 84 ft. in depth, by 30 ft. in width, and being 40 ft. in height. The stage and business arrangements will be on a comprehensive scale, if, as we learn, there are to be thirty dressing-rooms, in addition to a spacious green-room, manager's-room, property-room, painting-room, and scene-dock. In his plans for the construction of the building, the architect has produced a novel design for the roof. It will be formed of zinc, and is so arranged that for the purposes of renovating or redecoration it can be taken down without the necessity of scaffolding. It is stated that nothing but performances of a high class and sterling character will take place at the "Imperial," and it is confidently expected that the extensive facilities which now exist for reaching the theatre from every part of the largely-populated suburban portions of South London, will secure for the new establishment an ample amount of support. The ground is now being cleared, and in the course of a week or two the contractors, Messrs. W. & J. Lacey, of Clapham, will commence the building.

SOCIETY OF BRITISH ARTISTS, SUFFOLK STREET.

If the quality of pictures now on exhibition, or preparing for exhibition, in London were at all commensurate with the quantity, we should have great occasion for jubilation. Twelve exhibitions, we think, are now open; many more will be inviting visitors in another week or two. Were all as good as we could wish, it is evident that we could devote but small space to each. Nor do we hold that the absence of goodness, unless in the case of any flagrant outrage on taste, is a justification for departing from a scanty measure of space. As far as the paintings are concerned, it would often be more easy for the critic, as well as more amusing for his readers, to point out faults, than to praise non-evident merit. But the thought of the artist who may have done his best,—poor though the best may be,—often checks the bitter word on the very nib of the pen.

The forty-ninth Exhibition of the Society of British Artists opened on the 8th of April, with the respectable number of 520 oil-paintings, 346 water-colour drawings, and thirteen specimens described as "Sculpture, &c." Of the members and associates of the Royal Academy, the president contributes one production; Mr. Leighton, two studies; Mr. Marks, two pictures; and Mr. Redgrave and Mr. Watts, each one. Of these, the portrait of an anonymous subject, by

Mr. Watts, is perhaps the most striking thing on the walls. The most original productions, we take to be two water-colour landscape drawings, Nos. 825 and 836, by E. A. Petitt. They represent scenes in Cumberland, "Honester Crag," and "Sty Head Pass,"—striking little bits of our wilder lake scenery; but the remarkable part of them is the manner in which some blue body-colour,—cobalt, we take it to be,—boldly, not to say coarsely, thrown on, produces a very happy effect. Still, one such drawing would have attracted more admiration than two. A new effect may be either a stroke of genius or a happy accident. In the former case it is dangerous to repeat it; in the latter, fatal. "Evening" (79), by A. Clint, is a bright, clear bit of landscape, although it wants atmosphere. "Dolly Varden" (86), by W. H. Weatherhead, is a subject very pleasing in its motive. The sprightly maiden is attired in a charming yellow brocade, and leans against a style. Mr. F. T. Lott gives the "Pandveytje, Bruges," a peep at this semi-deserted capital of old Flemish industry that is bright with a light we never saw gild the brickwork of its towers. This is a picture that will mellow by time. There is a want of scale, not to say of perspective, in the home-scene by Mr. J. Tennant (143); but the ray of light that bursts on the rocks to the left has been caught from nature. So has the colour of the angry waves, but not the apparent texture. A pretty little domestic scene is "Not Sleepy," by G. F. Hicks (spelt G. E. Hicks in the catalogue), a sturdy little fellow being washed by a buxom nursemaid as a preliminary for being put to bed. He throws back his head as he utters the remonstrance, of which his face bears witness to the truth. A bright gleam of light falls on the rocks in No. 164, by E. Hayes, "Fishing-boats off Staithes, near Whitby." This is a picture that could be very well copied by photography,—an element of excellence which painters would do well specially to study. There is much that is pleasing in "Expectation" (168), by J. J. Hill: a pretty girl with a pitcher, waiting for her lover by the spring. But the mouth has been idealised, or conventionalised,—whichever may be the best term,—out of the rough truth of nature.

"Love leads the Way," by E. S. Kennedy, is the highest compliment we have yet seen paid to Mr. Calderon; for it announces him to be the head of a school,—the picture being evidently inspired by admiration of his style. We cannot say much as to execution; but the helpless wrath of the old gentleman, who is left perched on a stone in the middle of a water-course, while a gallant aids his daughter, or young wife, farther down the ravine, is very droll. "Morwell Rocks, on the Tamar, Devon" (246), by G. Cole, is another picture in which we have noted a happy effect of light. The most finished portrait, a little painty, perhaps, but giving a good idea of a man of no little note, is that of "His Imperial Highness the Prince Imperial of Japan," by J. Edgar Williams (265). The name of the prince is spelt "Higashi Fashimi, No Miya." On his head he wears a nondescript ornament, only awarded to high dignitaries as a part of their court dress, which somewhat resembles a lantern. His face might be taken for that of a European, and evinces no ordinary intelligence. We note No. 275. "A Happy Mood," by E. G. Girardot; "A Waterfall, Pont-y-Monach" (323), by J. B. Smith, in which the foam and spray are rendered with rare fidelity to nature; "An Evening Landscape on a Sussex Heath," with sheep and figures (324), by Mr. G. Cole; "Solitude by the Sea: a Dead Calm in Early Morning" (454), by J. Tennant; and "Quimper, Brittany" (508), by L. J. Wood. Mr. H. H. Couldery's "Nursery" (377) is a lovely all attended to; for the pet-dogs of the family have got into the cradle, and are making mincemeat of the dolls. But they are two beautiful little dogs, notwithstanding. Why Mr. Wyke Bayliss calls La Sainte Chapelle, of which he gives a very highly-coloured interior, "The Lily of France" we should be glad to know. In the "Sculpture, &c.," Mr. A. Chesneau's "Street Arab" is a little terra-cotta sketch of much merit.

St. Luke's Chapel, Norwich. — Messrs. Arrowsmith & Co. have manufactured a carved oak communion-table and a handsome chair for the Dean of Norwich, Norman in style. The table would be all the better if the jointings in the spandrels of the arches introduced to make it an imitation of a stone arcade, were removed forthwith.

ARCHITECTURAL WRITING.

ARCHITECTURAL ASSOCIATION.

THE usual meeting was held on Friday, the 5th inst. A gift of about a dozen valuable books to the lending library, by Mr. Wyatt Papworth, was announced;—a piece of judicious liberality worthy of imitation.

A paper was read by Mr. T. Roger Smith, entitled "Architectural Writing," being instructions to students of architecture as to their use of the pen:—

1. In writing for themselves,—in digests of studies, notes, and other processes for amassing valuable information.

2. In writing done in the course of business, addressed to clients, tradesmen, other professional men, &c.; such as correspondence, documents of various kinds, specifications, reports.

3. In writing for the public.

For all a single maxim would be found of much value, if well apprehended, and always instinctively attended to, lodged in the simple phrase,—"Remember the reader."

The following is a condensed statement of Mr. Smith's recommendations, under the several divisions of his subject:—

I. For students' notes, &c., the requisites,—accurate information noted as completely as possible when first obtained, and means of ready reference; a commonplace book for extracts or condensed results (always append edition, volume, and page of any book); a journal for regular or occasional travels: of course, in addition to the usual sketch-books, and so on. A chronological order uniformly adhered to will bring everything into sequence; mere paging and a slight index of principal subjects should be ordinarily sufficient: too elaborate a system will mostly be abandoned, and never renewed. The journal would contain a general plan, &c., with the principal dimensions of any building studied, notes as to materials, and the effect,—the impression made on the student by the whole or parts: whether quiet, gaudy, overdone, or apparently perfect: particulars as to such matters as the height above the eye of any details observed or measured: the surface of lighting area, its relation to the whole area, and the result. To describe a building well and briefly requires much practice, and, above all, a power of seizing at once the main distinctive features, Mr. Smith pointed out as models, in his opinion,—the late Mr. Petit's books; the descriptive articles in M. Viollet-le-Duc's Dictionary; Mr. G. E. Street's books on Italy, Spain, and paper R.I.B.A. on "Le Puy" (January, 1861). Failures, how manifested,—their causes, remedies if any; success, and analysis of real or apparent causes; miscellanea, as sizes of objects, carriages, animals, machinery, musical instruments,—all the details, in fact, that may at leisure be easily got together, but perhaps with difficulty when suddenly wanted, would thus find their proper places for use hereafter, if need be. Collections of cubical contents of buildings, costs, and the circumstances influencing the same, are very useful; in all these, and similar things, however, it cannot be often enough said that the training in terse, direct statement, made at the same time as full as necessary, was perhaps really, after all, the most valuable thing obtained.

II. Of business writing: the object is to convey information in such a way as to render mistake impossible. The requisites for letters,—legible handwriting, date, address, and a very readable signature (printed name at head, if the usual signing is likely to be beyond the ordinary reader), press copy, posting entered in a book. The memorandum now in some use among tradesmen does not seem properly professional (and must not be accepted in any case in lieu of a letter, as it is not usually signed, and therefore might possibly be repudiated in some instances). The official method of recapitulating all the contents of the letter answered may be useful at times, and prevent mistakes by correspondents who do not keep copies of their letters; for ordinary use it will, however, be found practically sufficient to refer to the letter answered. Letters received should be acknowledged usually by return of post, even if the expected answer cannot be sent; but letters that stir the temper should always be passed by for a day at least, and may be, would often be better treated of at an interview (*litera scripta manet*). In case of instructions from clients, mutual good understanding will be often promoted by a copy of the architect's memorandum being sent to him; a dissent or a fresh direction by letter may in such case prevent difficulty thereafter. Notes agreed to by both parties on the spot, very full and explicit, should always be made after a long interview involving a distinct arrangement; as in the case of a reduction of builder's tender by agreement before commencing pressing work, where, perhaps, many items have been subject to revision, &c. Specifications should have a uniform character throughout,—either full and even minute from beginning to end; or general—touching only on the important points, and leaving the drawings and dimensions, scantlings, &c., thereon to explain the rest: either (supposing the drawings prepared accordingly) will be found efficient. For reports state your results; omit your reasons: give the facts, the advice, and an estimate. Models may be found in Sir C. Wren's reports in the "Parentalia;" or Sir C. Barry's, given in his Life by his son.

III. Of architectural literature,—as other special class literature now a matter of necessity, owing in part to the small leisure, in part to the few intimacies,—the press takes to many the place of society. There are some who ought to engage in this, and some who ought to leave it alone. Long and well-directed study of some sort for the acquisition of a distinct, or, at any rate, a serviceable style, composition being an acquired art, like penmanship only occasionally well acquired; something of importance to say, either as the outcome of special gifts or of special education. These may warrant the attempt, either sustained or occasional, to mould or to influence public thought, or to supply the materials of knowledge. Sketching at some length the influence of writers on art matters in recent times, commencing with Sir Walter Scott, especially with reference to the Gothic Renaissance, instancing Mr. Rickman and M. Viollet-le-Duc as influencing architecture through architects, and other writers as acting at first hand on their employers,—Mr. Smith stated that there seemed to him many divisions of architectural literature as yet only partially treated. While it might safely be said that the writing of distinct treatises for the stimulation of art-feeling had best be left (like poetry) to those who are unable to refrain; and while we are almost overdone with hospitals and houses, good and thorough books, with full illustrations on theatres, railway stations, markets, warehouses, factories of various kinds, &c., would advance the standpoint from which such works in the future should start. Some buildings also deserve a monograph after the manner of Captain D. Galton's "Herbert Hospital." In conclusion, the paper dealt with the advantage to architects themselves, and to their profession, as well as to the public, of papers carefully written at intervals on matters that have been well studied. By such exertions some useful faculties are kept in activity, and as becomes the members of a liberal profession, the information that education, opportunity, or fortune may have placed in the way of one man is shared generously with others. In all cases he would reiterate his text,—advise the writer to be sure that he is well in advance, but not out of sight, — to "remember the reader."

IMPROVEMENTS FOR KENSINGTON.

CHANGED from the appearance it bore some thirty years back, of a quiet suburban village, Kensington has become the most important district of outlying London, being the main western arterial line to and through the metropolis. Bordering Hyde Park, and enjoying the singular advantage of another park and baronial hall, together with the Royal Palace at a short distance, and the unrivalled Kensington woods and gardens, its position and south aspect must always give it a preference before any other suburban quarter.

On approaching, the Albert Hall and Monument give dignity to the roadway, which has been to some extent enlarged and divested of old unsightly brick walls; and just on entering the town, the winding of Gloucester-road has been rectified and opened by Messrs. Cubitt, who have erected several important mansions just opposite to Kensington Gardens. On the north side, the gardens have been tastefully planted and decorated, where some fifteen years back stood a hideous old cavalry stable, which, on the repeated instances of the writer, through the *Builder*, was removed.

Within two years immense improvement has been effected through the local authorities, in widening the thoroughfare opposite the church,

and by the erection of a commanding structure upon the site of the old sacred pile; but still there remains to be done a work that most of all would tend to the easement, the appearance, and the prosperity of this royal town.

We all know that there are two great leading routes,—one leading west from Piccadilly, and another, the Bayswater line, from Oxford-street, in a parallel direction for several miles; but few, excepting those who feel the want, notice the fact that there is no direct traverse road or street between Park-lane and Addison-road, a distance *of over two miles*.

On the south side there are numerous roads and streets of respectable width; but these lead to Chelsea, Fulham, or nowhere.

On the north side there is a winding narrow way, not inappropriately called Church-lane: this meanders through antiquated tenements, built without order or regard to the causeway, up to the elevation of Campden-hill, where the character of road, as well as the structures, is of a more modern type, but descending again to Notting-hill, by Silver-street, the line is little better.

On turning northwards by the church the road curvets round the churchyard railings, which obtrude some 30 ft., and here the causeway varies in width from 13 ft. to 17 ft.! Now in order to give effect to Mr. Gilbert Scott's fine architectural achievement, the churchyard railing should be drawn inwards to allineate, or nearly so, with the continuation up hill; and between Holland-street and Duke's-lane, a range of ten paltry one-story shops advances in a curve from 10 ft. to 25 ft. on the line of causeway. Then, again, an old, dreary-looking house, now used as a monastery, advances about one-third of its frontage upon the line of any proposed modernised way.

In making a new street, the purchase of such valueless property as this ought to offer no barrier to improvement, for the wayside building plots would probably indemnify any such purchases, to be made of course by valuation jury. The Campden Grove Cathedral impinges a little on the line, but the withdrawal of the railing at the upper end, similar to its construction at the lower, might perhaps suffice, seeing that no portion of the structure could be removed without prejudice to its integrity.

The parochial authorities have work enough on their hands in relation to the police-station, just now under consideration; that subject I avoid, as it is under discussion, only expressing the wish of many residents "that no niggardly dealing may prevent the erection of a building that may be a lasting credit to the town."

As to the opening of Church-lane, that is also under consideration. The traffic-way of that line is wholly inadequate to its growing requirements; in fact, St. Martin's or Chancery lane is not more used by carriages, carts, and vans; and, if taken up with spirit and purpose, it would not only repay the outlay, but embellish the neighbourhood, adding at the same time to general prosperity and comfort. T. H. H.

CONDITION OF AN IRISH COURT-HOUSE.

At the Queen's County Spring Assizes, after the judge took his seat, he said that he hoped some improvements had been made in the Court. One of the counsel replied to his lordship that matters remained *in statu quo*, and that nothing had been done either for the bar or the jury, with the exception of the dock having been removed. The foreman of the grand jury came before his lordship, accompanied by the county surveyor, and both gentlemen said that the matter was brought by them before the road sessions, but the presentment that resulted from the previous advice of his lordship had been thrown out. Hereupon his lordship soundly rated all concerned in the neglect in the following fashion:—

"The presentment sessions have nothing whatever to do with the Court-house. There was a small thing I requested to be done in the King's County Court-house, and it was done by the grand jury, at an expense of about 20*l*. The gentleman who has been addressing the jury here before you came in had to sit upon a bench there, and I am put here in a pit I will not continue to sit in. The jury have no cushions on their seats. I would not think of asking the jurors in the Court of Queen's Bench to sit on such seats. It would be most disrespectful to gentlemen to compel them for hours to sit on such seats. This building is an antediluvian one, and it could not be arranged as a court of justice ought to be, but the work should be altered. *The room is a filthy one.*" Here the foreman interposed by saying the grand jury were under the impression that the matter should come before the road sessions. Instantly his lordship, with increased warmth, continued:—"Ask the Chief Justice of the Common Pleas, who is the county judge here, and if he says the grand jury have not the power to improve the court-house, of course it need not be done. I was in a third-rate court-house in Scotland, and the arrangements were most perfect and beautiful, because the people of Scotland have a regard for the proper administration of the law. This court-house is like an old barn, and a very bad barn. It is a shabby court-house, as shabby as any court you could find in the whole of the three kingdoms. A court of conscience,—a forty-shilling court in England,—would not be so shabby."

SOME ROUGH-HEWN SANITARY MAXIMS FOR THE PEOPLE.

The bath is a blessing.

A lover of flowers,
A hater of filth.

A stagnant drain
Bodes death and pain.

In labour there's health.

Badly-built dwellings are often hospitals, but seldom houses of recovery.

Care for the infant.
Training for the boy.
Occupation for the man.
Rest for old age.

Neither overcome sleep,
Nor be overcome by it.

A cultivated garden is a floral Eden,
A happy and healthy home a moral one.

Preserve thy health in early youth,
Or physic in old age will avail thee little.

Good draught, no choke;
Better fire, no smoke.

A thorough drainage and pure water-supply are the prime essentials of public health.

Extremes, though distant,
Will join issue still;
And heat or cold
Can cure or kill.

In choosing a house for health,
Look below the foundation.
In choosing a house for strength,
Look to the workmanship and materials.
In choosing a house for beauty and utility,
Please yourself, and strive to please those who know better.

Draughts being doctors
(And doctors send them)

When gas is escaping find the leak with an extinguished candle.

Sloth and dirt grow apace,—with long nails.

Foul smells have fouler causes.

With rats comes rot.

With mice comes mischief.

The mother is the fittest nurse.

The parent should be the first educator.

RABBET, RABBIT, OR REBATE?

I have been often disposed to put some queries to my brethren in the building crafts respecting the correctness of the terms used by them as to methods common to their workmanship. Among building operatives the word I have selected as a first example is generally used, spoken, sounded, and written in the two first forms, and the second form appears to be greatly in the ascendant.

Having had an intimate acquaintance with building matters and building operatives in many parts of the British Islands, I have noticed the variations that occur in the technical terms used by workmen to distinguish the same or similar methods of work.

The same operation by a mason or stone-cutter, bricklayer, cabinet-maker, or iron-worker as that performed by the carpenter or joiner, is often called by another name; the sole difference being very often only the material on which the operation is performed. Many terms used among building operatives in the North of England are quite unknown in the South; and the same holds true in relation to Glasgow, Edinburgh, and Dublin, in all which places the English language has been common for centuries, and intercourse with the workmen of other parts of the kingdom frequent.

Yet workmen are often puzzled and confused who are strangers when they get a job in any of these places, when directions are given by the foremen or masters to do so and so, the words employed being quite new to them, and which, if expressed in their proper building or architectural form, would be thoroughly understood.

To return. The words under notice are, however, easily understood, no matter in what way they may be pronounced or written. My purpose is to arrive at the correct reading. I believe, myself, that the proper form of the word is "rebate," and so I find it in all old building treatises. Its derivation is obvious to my mind, as I deduce it from the primal word, "bate," or "abate," to lessen or reduce; hence "re-bate," to reduce still lower.

A piece of wood or stone when "squared,"—that is, reduced or planed down to its required form,—is lessened in size; so when a rabbet, or rebate, is sunk in any part of its surface, it is consequently abated lower, or, in other words, re-bated. This, I submit, is clear enough.

I find the French word for the process is *rebattre*, which is identical with the old English term in derivation. From the same root we have several words,—bate, bated, abate, abatement, rebate, rebated, &c.

With masons, the term for rebated is "joggled," whether the stones are fitted into others externally or internally, as in architraves or lintels, voussoirs, &c. The word "joggle" is also used by carpenters, joiners, and cabinet-makers, but not in the same sense. It is used to denote those over-lengths of wood left on the stiles of pieces of framing, for security's sake, before the process of mortising, tenoning, or halving takes place, and are afterwards cut off when the work is finished.

A rebate, we see, then, is a joggle in one form, and a joggle a rebate, but not in all forms. I venture to say that in architectural and building matters we need badly a revised dictionary of technical building terms. I will show on another occasion many words most wrongly used, and repeated again and again by our *soi-disant* technical guides and educators, who are misleading our workmen in many ways, instead of instructing them. Technical knowledge can only be taught by practical professional men; and many of those who assume the office of teachers ought as a preliminary to "read up" for their own information.

In speaking of the word "rebate" above, the carpenter's or joiner's "rabbet-plane" might have been instanced, and the query may be put, Why is a sash-rebating plane termed a "fillister"? Again, is a rebate a groove, or a groove a rebate, or to constitute a groove in joinery, must the channel or sinking have two sides in contradistinction to the common rebate on the angle? Again, why is another joiner's tool used for making grooves called a "plough"? Is it from any similarity to the agricultural implement?

A Craftsman.

*** There is more to be said in favour of "rabbet" than some think. The French word from which we are said to derive it is *rabattre* (to put down, to abate), not "*rebattre*" (which has an entirely different meaning), though our correspondent is not alone in using the latter; see, for example, the glossary in Gwilt's "Encyclopædia." Again, it need not be forgotten that *raboter* in French is the verb "to plane;" and *raboteur* is a planer. Moreover, *raboutir* is "to join by the ends."

THE TRADES MOVEMENT.

Ipswich.—At a meeting of twenty master builders several resolutions were agreed to. The first is rather indefinite, as it begins by disclaiming the existence of a league, and ends by establishing one. It runs thus:—

"That we do not acknowledge the existence of any league; but whatever alteration is made in the rate of wages the same shall be communicated by the masters to their men, and that each shall be at liberty to make any arrangement he chooses, provided only that this meeting shall fix the maximum rate of wages to be given to skilled workmen, which rate shall be acted upon by us all."

The next is:—

"That for the future the men be paid by the hour, and that the maximum rate of wages for skilled carpenters,

joiners, and bricklayers shall be 5d. per hour; and for good labourers 3d. per hour; and that ten hours is to constitute a day's work."

Leicester.—The strike of joiners and carpenters at Leicester continues. The master builders adhere to their resolution to grant an advance of three-eighths of a penny per hour only, and not to employ any men on strike.

Redditch.—The agitation which has been going on for some time among the carpenters, bricklayers, and painters, came to a termination on Monday. The demands of the men were an increase of wages, and a reduction in the hours of labour by leaving off work on Saturdays at one o'clock. The carpenters and bricklayers demanded a rise of 1s. per week, and the painters 2s. a week, with the diminished hours on Saturday. On Wednesday the men resumed work, the rise in wages and reduction in the hours of labour having been conceded by the masters. Instead of the masters, however, paying by the week, as has hitherto been the custom, it is arranged between the masters and men that the latter shall be paid by the hour, at the rate of 5½d.

Bewdley.—A meeting of the *employés* in the building trade at Bewdley has been held, to consider what steps should be taken as regards adopting less hours of labour, and asking for a higher rate of wages. There was a good attendance, and after some discussion it was resolved that the time of labour for bricklayers, carpenters, and painters, for the first five days of the week, should be from six o'clock in the morning till 5.30 in the evening, deducting one hour and a half for meals; and for Saturday, from six in the morning till two in the afternoon, allowing half an hour for breakfast; that the wages for the above time for bricklayers and carpenters be 27s. per week, and that an advance of 3s. per week on their present rate of wages be paid to painters. A copy of this resolution has been sent to all the masters of the town, asking them to call a meeting at their earliest convenience to take the matter into their consideration. The men propose that the above concessions be made to them in the week ending 4th May next.

Coventry.—Some time since the masters were served with a notice demanding a rise of wages from 5¾d. to 6½d. per hour for carpenters and joiners; for the bricklayers, from 6d. to 6½d.; labourers, 3¾d. to 4½d. This advance, with the restrictions demanded for overtime, the masters felt they could not accede to. Various meetings were held without any practical result, and at last it was resolved to submit the whole affair to arbitration. The carpenters and joiners asked the mayor, Mr. W. H. Hill, to act for them, and the bricklayers and labourers, Mr. J. Gulson. These gentlemen have now given in their award, which is as follows:—The carpenters and joiners to have 6⅜d. per hour, being a rise of 2s. 11d. per week of 56½ hours; that is, from 27s. 1d. to 30s. The bricklayers, 6⅜d. per hour, being a rise of 1s. 6d. per week, from 28s. 3d. to 30s.; and the labourers, 4d. per hour, being a rise of 1s. 2d. per week, from 17s. 8d. to 18s. 10d.; and all overtime made at the request of the master between eight o'clock in the evening and six o'clock in the morning to be paid for at the rate of time and a half, and on Sundays at double the ordinary rate. Overtime to commence on Saturdays at one o'clock. Overtime for labourers to commence at four o'clock on Saturdays as before. This new arrangement has just come into operation. The labourers, however, have declined to recognise the decision of the arbiter (Mr. Gulson), and such of them as are unionists are now out on strike.

Cockermouth.—The master joiners have held a meeting for the purpose of considering the propositions of their workmen, which were submitted to them a short time ago, for a reduction in the hours of labour, and an advance of wages. Mr. Joseph Bell presided. It was decided by the meeting to concede the demand of the men for the adoption of the nine-hours system, but no action was taken with regard to the other proposals.

Edinburgh.—At a general meeting of the joiners it was agreed that copies of the bye-laws as adopted should be sent out to all the employers in the city for their signature, and that a cessation of work should take place on Monday in those shops and among those squads where the bye-laws are not signed. At another meeting the secretary read a list containing the names of seventy-eight employers who had signed the by-laws. The names of some small employers who had not signed them were then read, and the list was remitted to the joint committee, with powers to take steps to obtain the signatures of all the employers.

Glasgow.—A section of the Glasgow brickmakers have struck work for an increase of wages.

THE PUBLIC HEALTH BILL.

A DEPUTATION from the Social Science and British Medical Associations have waited upon the president of the local Government Board, relative to this Bill, to ask for amendments to it. The deputation was introduced by Mr. Corrance, M.P., who mentioned that three associations were represented, namely, the Social Science, British Medical, and Medical Officers' Associations. The main points were the question of arrears; of local authorities; and of suitable and proper authorities. They thought that the success of the Bill must be of greater importance than its passing; but they could scarcely look with satisfaction on it without some alteration. A memorial was then read, which set set forth at great length the various points which needed alteration, and concluded by requesting an assurance from the president that the sanitary work of other departments of central administration might be consolidated in the local Government Board; that the constitution of the Board for sanitary purposes might be revised and strengthened, and that a measure might be introduced by her Majesty's Government in next session for the consolidation of the existing sanitary laws; and also that he would consent to introduce several amendments in the Bill now before Parliament, the chief points being that there should be one authority instead of a division of authority, in whom should be vested the power of directing the administration of medical relief, who should appoint officers of health, &c., and that a moiety of the expense of medical and scientific officers, and of sickness returns, should be borne by the national exchequer. Several members of the deputation having spoken, Mr. Stansfeld, in reply, said he could not affect to agree with the views which had been propounded, because he adopted the views of the Sanitary Commission. He did not think the time had come for consolidation. After several points were discussed, Mr. Stansfeld said, with regard to the power he proposed to take, if they read the clause they would find it was unlimited, for he did not mean to tie his hands in that respect, but to proceed tentatively, and he really thought as practical men that ought to be some satisfaction to them. As to the medical officers of health, the Bill had been misunderstood. They only said that they might be medical officers. When the Bill came into operation the whole of England and Wales would be mapped out into districts. The points in dispute were so complicated that, as Mr. Stansfeld said, it was very easy to misunderstand them.

COLOURING VENEERS.

SOME manufacturers of Germany, who had been supplied from Paris with veneers coloured throughout their mass, were necessitated by the late war to produce them themselves. Experiments in this direction gave in the beginning colours fixed only on the outside, while the inside was untouched, until the veneers were soaked for twenty-four hours in a solution of caustic soda, containing 10 per cent. of soda, and boiled therein for half an hour. After washing them with sufficient water to remove the alkali, they may be dyed throughout their mass. This treatment with soda effects a general disintegration of the wood, whereby it becomes in the moist state elastic and leather-like, and ready to absorb the colour. It must then, after dyeing, be dried between sheets of paper, and subjected to pressure, to retain its shape. According to the *Society of Arts Journal*, veneers treated in this way, and left for twenty-four hours in a hot decoction of log-wood (one part of log-wood to three of decoction), removing them after the lapse of that time, and, after drying them superficially, putting them into a hot solution of copperas (one part of copperas to thirty of water), will, after twenty-four hours, become beautifully and completely dyed black.

A solution of one part of picric acid in sixty of water, with the addition of so much ammonia as to become perceptible to the nose, dyes the veneers yellow, which colour is not in the least affected by subsequent varnishing.

Coralline dissolved in hot water, to which a little caustic soda and one-fifth of its volume of soluble glass has been added, produces rose colours of different shades, dependent on the amount of coralline taken.

IN PARLIAMENT.

The Thames Embankment Bill.—Colonel Wilson-Patten brought up a report from the Standing Orders Committee, stating that in the case of the Thames Embankment Bill those orders which had not been complied with might be dispensed with, but that the Bill should not be read a second time before the 7th of May, and that fresh notices should be given in the *London Gazette*.

Dwellings for the Poor.—Lord J. Manners asked the hon. member for Truro whether the Metropolitan Board of Works had directed his attention to providing dwellings for the poorer classes, in place of those cleared away to effect metropolitan improvements. Colonel Hogg replied that the Board were considering this question. It had been referred to the Parliamentary Committee, and the solicitor had been instructed to draft a clause which he trusted would meet the requirements.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

THE fifth annual meeting of this Institution was held on the 27th ult., at 165, Aldersgate-street, Mr. George Plucknett (Messrs. Cubitt & Co.), president for the ensuing year, in the chair.

The balance-sheet showed an increase in the amount of annual subscriptions for the past year of 13*l.* 13s., and in the interest received on invested funds of 4*l.* 7s., but a decrease in the amount of donations of 24*l.* 18s. The whole income was 273*l.* 15s. 3d., the amount granted in relief 93*l.* 6s. 8d., and the cost of management 61*l.* 14s. 3d. An addition of 200*l.* to the invested funds during the year had brought them up to 1,000*l.*, of which 600*l.* belong to the relief fund, and 400*l.* to the orphan fund. Two widows and one incapacitated clerk had been added to the list of pensioners, but the latter had died shortly after his election; the committee, acting under rule 5, allowing his widow one-half her husband's pension until her election for the full amount.

Mr. Plucknett, in moving that the report and balance-sheet be received and adopted, said he wished to congratulate the Institution on the progress made during the last four years. He trusted this might become a much larger institution, and be able to relieve all the applications made to it, and mentioned the fact that in looking over some very early papers connected with the Builders' Benevolent Institution, he observed that their expectations were very small, being at first confined to the hope of relieving three applicants, then six,—now they annually assisted forty or fifty, and possessed large invested funds. It required men earnest in the work to carry on such an institution, and such men they had in the present officers, who he thought deserved much praise for the economical way in which the society was worked, and for the zeal and perseverance shown in an unselfish cause, the Institution being not for subscribers only, but for all builders' clerks. Being a class matter the area in which to look for support was limited; but although the same persons were applied to over and over again, yet the large builders of London could be fairly appealed to, as the employers depended upon the clerks and *vice versa*. He should be glad to see more of the clerks become subscribers, as it would show their appreciation of a cause for the benefit of their class, and a constancy of income from annual subscriptions was the best.

Mr. Benjamin Hannen (of Messrs. Holland & Hannen) followed with an expression of the pleasure and satisfaction it had given him to have been connected with this young institution as president during last year. Having been a builder's clerk himself, he sympathised with those who had established and worked it so successfully. It had derived great advantage from the previous presidentships of Messrs. Henshaw and Stirling. He knew no one who had such a thorough knowledge of the working of such institutions as Mr. Plucknett, and he heartily congratulated the committee upon the prospect of being under such good direction for the ensuing year.

Mr. G. S. Pritchard proposed a vote of thanks to the retiring officers, which was seconded by Mr. Matthew Hall.

The erection of fresh officers for the current year and other formal business occupied the remainder of the meeting, which concluded with a cordial vote of thanks to Mr. Plucknett.

BILSTON TOWN HALL AND FREE LIBRARY.

THE foundation stones of the new town-hall and free library for Bilston, now in progress, have been laid. The site is that of the old post-office, and once adjacent buildings, at the junction of Church-street and Wolverhampton new road. The new building will have a frontage to the Wolverhampton-road of 95 ft., and on the return front of 74 ft. They will be erected with brick, stone-faced. The town-hall will afford accommodation on the ground-floor for the Town Com-

missioners, committee-rooms, with waiting-room, town-clerk's, surveyor's, and collector's offices. On the first-floor will be a large room, 70 ft. by 43 ft., for public meetings, with orchestra gallery in the west end, and several retiring-rooms. The public entrance to the town-hall will be carried up as a tower, forming a prominent feature on approaching the buildings from Oxford-street. The free library buildings, although uniform in frontage with the town-hall, will be distinct therefrom. The entrance will be from the Wolverhampton-road, and the accommodation on the ground-floor will be—reading-room, 36 ft. by 20 ft. 10 in., and library, 20 ft. by 17 ft. 6 in.; and on the first and second floors will be class-rooms. There will also be in the town-hall a porter's residence. The total cost of the buildings is 5,000*l.*, of which 1,300*l.* is the portion of the free library. Mr. Bidlake, of Wolverhampton, is the architect; and Mr. Nelson, of Dudley, the builder.

SILVER WORK.

Messrs. Elkington & Co. have recently produced a remarkable work, in *repoussé* silver, relieved by steel damascened with gold, allegorical of Music and Poetry. It is of large size, and includes a vase in the Renaissance style, upon a long plateau: upon one side of the vase, are four of the Muses, and upon the obverse the other five. The summit of this vase bears two Genii. At the sides of the vase, seated in recumbent attitudes, are placed draped female figures, who represent Music and Poetry. Bas-reliefs,—Pegasus occupying one; the other, a winged Griffin, carrying the Genius of Imagination; masks, and other fanciful emblems and trophies, complete the work. When we say that it has occupied the artist, M. Morel Ladeuil, for several years, and is valued at 6,000*l.*, our readers will have some idea of its importance, especially if they remember the Milton shield, the work of the same artist. We must go farther, however, and point to it as the most important work of its kind produced in this country, exhibiting artistic genius as well as skill of the highest order.

THE WORKS OF HERR GULDENPFENNIG.

At a meeting of the Royal Institute of British Architects, held on Monday, April 8th, Herr Guldenpfennig, diocesan architect to the Bishop of Paderborn, was elected an honorary corresponding member of that body. Attention has been previously called to the works of Herr Guldenpfennig in this journal, as well as in a paper read last November, before the Institute, by Mr. H. W. Brewer. In a future number we shall give illustrations of buildings carried out from this gentleman's designs. Mr. Guldenpfennig's works are in the Gothic style; and the principal buildings upon which he has been, or is now engaged, are the following:—The restoration of Paderborn Cathedral; new seminary at Paderborn; house for Herr Mallinkrodt; grange and chapel for the Baron von Brenkin; dwelling-houses at Paderborn, Dortmund, &c.; churches at Paderborn, Ruthen, Ochsersleben, Büderich, Hoerde, Wattenschied, and Warbourg. The churches at Paderborn, Hoerde, Büderich, and Wattenschied, are important cruciform buildings.

GAS FROM WOOD.

Sir,—Will any of the readers of the *Builder* give me any information, through the medium of your journal, on the subject of making gas from wood? I believe it is manufactured thus in some parts of Germany, and am desirous of gaining all the knowledge in the matter I can obtain.

Albert Morse.

FALLS OF STANDS.

At the Bridgenorth Steeplechases the grand stand suddenly gave way, and about 150 of its occupants were more or less hurt.

At the Lurgan steeplechases, which took place close to Belfast, in the presence of from 15,000 to 20,000 people, a stand had been erected by the council of the races, and a second by a private speculation, to which admission was at the cheapest rate. At the most interesting part of the day's proceedings, the start for the Brownlow Cup, the latter stand gave way, and all the people upon it were pitched among the *débris*. Between twenty-five and thirty persons are known to be injured, eight or nine seriously, and in two cases, at least, it is believed the result will be fatal.

As mentioned by us last week, a stand erected to witness the laying of the chief stone of a Wesleyan Chapel in Kentish Town gave way under the weight of the crowd upon it, and several of those precipitated sustained serious injuries.

SCHOOL BOARDS.

London.—The following architects have been invited to compete for the schools at Old Castle-street, Whitechapel, for the London School Board:—Messrs. T. W. Aldwinckle, Edward Biven, Francis Chambers, Habershon & Brock, Edward C. Robins, and John Tarring & Son.

Conisborough, Yorkshire.—Mr. William Watson, of Wakefield and Doncaster, has been appointed architect; and schools for 600 children, with master's house, are to be built.

CAUTION TO BUILDERS.

An adjourned case, at Worship-street, under the Buildings Act, came on for hearing before Mr. Hannay, on Wednesday, the 27th ult., in which the District Surveyor for West Hackney summoned Mr. Wm. Townshend, of Greenwood-road, for the penalty, for neglect in giving notice before the commencement of works.

The magistrate, after hearing the evidence, fined the defendant in the penalty of 5*l.*, and costs.

THE NEW BUILDINGS FOR THE CITY OF LONDON UNION.

The new offices and premises in Bartholomew-close, which have for some time been in course of erection, for the City of London Union, are now almost finished. The building, which is in the Elizabethan style of architecture, is in three blocks, namely, the office block, the Board-room block, and the recess or centre block. The first two stories of the office block are of Portland stone, the remainder being of brick, with Portland stone dressings; and the recess block is similarly constructed, but finished with a pavement, upon which appears the City arms. The Board-room is gained from the central hall by a moulded spandrel staircase of stone, and there is a similar staircase from the Board-room to the committee-rooms. Mr. W. Hudson is the architect; the builders being Messrs. Hill & Sons.

THE KEEP OF MIDDLEHAM CASTLE.

Although the size and extent of Middleham Castle are but moderate for the figure it has made in local story, and the rank and power of the succession of great barons who built, augmented, and have inhabited it, it is in itself a remarkable building, and presents much of antiquarian interest. It is placed on the southern edge of the town of Middleham, and a little above it. Its immediate position presents no great natural advantages, but for the general defence of Wensley Dale it is not ill chosen, standing between the Yore and the Cover, about a mile and a half above the junction of the two streams.

In plan Middleham is rectangular, composed of a keep about 100 ft. north and south, by 80 ft. east and west, and to the base of its parapet about 55 ft. high, which is placed in the centre of an *enceinte*, also rectangular, 240 ft. north and south by 190 ft. east and west, so that the area of its only ward is but limited. The *enceinte* is a curtain wall, about 30 ft. high. At its north-west and south-east angles it has rectangular towers of slight external projection, which rise above the curtain. Its south-west angle is capped by a drum tower of three stages, and on the north face, but at its north-east angle, is the gatehouse, rectangular, of slight projection, but four stages high, basement included. The east curtain has been destroyed. Upon the south and west curtains are many exterior projections, buttresses, and near the centre of each a rectangular tower. The domestic buildings were chiefly placed against the curtains on the north, west, and south sides, and thus the ward is reduced to a mere passage between these buildings and the keep.

The gatehouse is about 25 ft. deep by 50 ft. broad. It has in its exterior front a central portal, round-headed, beneath a pointed arch of relief. This is flanked by buttresses, 2 ft. broad by 1 ft. deep, and the adjacent angles of the building are supported by similar buttresses, two being set on each. At the first story these pass into a single buttress, which caps the angle,—a pleasing arrangement, giving variety to the outline. The entrance vault, like the gateway, is round-headed, with ribs for doors, and it has a single portcullis groove at its inner end. It is all of one date, and in the Decorated style. This gatehouse, and the buildings of the ward generally, are Decorated, and require far more examination than the writer has been able to bestow upon them.

The Keep is reinforced at the four angles by broad, flat capping buttresses, of variable breadth and projection, and which, no doubt, rose above the battlement into rectangular turrets. The buttress on the north-east angle has a breadth of 26 ft. on the north and a projection of 7 ft., and to the east a breadth of 16 ft., and a projection of 1 ft. It contains the chamber communicating with the battlement of the outer gate of the barbican, and below is solid. The buttress on the north-west angle has to the north a breadth of 22 ft. and a projection of 3 ft., and to the west a breadth of 12 ft. and depth of 1 ft. On the south-west angle the breadth of the west face is 14 ft., and of the south 11 ft., and the depth of each is 1 ft.

The south-east angle, as at Rochester, contains the staircase. It has no projection on the east face, being covered by the barbican. On the south its breadth is 20 ft., and its depth 6 ft. This alone preserves the remains of a turret above the battlements. Excepting the stair-turret, the angles of the keep seem solid below, though worked into chambers on the first floor.

There are also projections on the west and south wall. That on the west has a depth of 12 ft., and a breadth of 18 ft. The lower story is broken away; it was hollow, and looks as though meant for a gigantic cesspit. The upper part hangs unsupported save by the cohesion of its cement, and greatly needs conservation. This turret is about 51 ft. from the north end, and 31 ft. from the south. The projection on the south wall is 12 ft. broad, and 8 ft. deep. It is placed 24 ft. from the west, and 44 ft. from the east angle, coinciding with the partition-wall within. This turret is hollow, and forms a great shaft for garderobes in the upper stories. In its face, at the ground level is a round-headed arch, of 3 ft. opening, and 4 ft. high, the outlet of the sewer, but above ground. These two turrets at present cease at the level of the parapet, but probably rose sufficiently above it to cover a garderobe. The keep has a plinth on the north, west, and south sides. The east face is covered by the barbican. The walls are about 9 ft. thick.

The keep has a basement floor at the ground level, and a first or state floor, and on the east side an upper floor. It is divided by a wall 9 ft. thick into two unequal parts, that to the east being 29 ft., and that to the west 24 ft. broad, each being about 84 ft. long. A well stair 12 ft. diameter, ascended in the south-east angle from the basement to the battlements, lighted by loops, and with doors to each floor.

The east chamber into which this stair opens by a large and apparently round-headed door, now broken, was vaulted in two lines, resting upon five cylindrical piers, about 3 ft. 6 in. each in diameter, and averaging 14 ft. from centre to centre. The vault seems to have been a barrel, groined. At each end were two square-headed loops, high above the floor with stepped recesses. The east wall contains only three square lockers, and the door of the staircase. The west or partition-wall side is pierced by five openings, about 4 ft. broad, and round-headed, three to the north, and two to the south of the thick solid central part. Probably these were introduced to lighten the work, and all but one or two thinly walled up. One must have been a doorway, as from the eastern lay the only communication with the western chamber.

The western chamber seems to have been spanned by a single vault, apparently slightly pointed and groined in six bays. In each end is a single square-headed loop. On the west side are seven loops, the central part being occupied by the unpierced rear wall of the turret already described.

First floor, east side. This was evidently the hall. It is very lofty, and in its north end is a round-headed window of 2 ft. opening, and 7 ft. high to the springing. In the south end are two similar windows, but about 14 ft. long, and a curious water-drain between them and the door. This, the door from the stair, is plain round-headed, and of 6 ft. opening. Close north of it is a similar door, of 7 ft. opening, quite plain, and

without a portcullis. This is the main entrance, and opens from the barbican tower. Beyond this is a short window, and then three long ones, like those at the north end, so arranged as to open clear of the exterior barbican stair. The west wall has an opening at each end, the bulk of the wall being solid. The northern of the two openings was probably the great door of passage between the rooms; the southern communicated with the garderobe in the south wall. In the north-east angle is a very curious mural chamber, 12 ft. east and west, by 9 ft. north and south, vaulted in a single groined bay, round-headed, and springing from half-octagon brackets in the angles, each the cap of a detached shaft, now removed. In the north wall are two, and in the east one loop. A door in the south wall opens into the north end of the hall, and one in the east wall passes obliquely through the wall, and evidently led to the battlements of the outer gate of the barbican, over the foot of its staircase. This room is much broken, but its fittings are original, and late Norman. If the hall had a fireplace in masonry, it was in the west wall, at a part recently repaired. It is not clear how the hall was roofed; possibly the original covering was a high-pitched roof, with the battlements above, but at present the side walls carry a table, with corbels of a plain billet moulding, on which an upper wall, about 12 ft. high, is advanced 6 in. In these walls are large window openings, with segmental arches, three on each side, which must have opened clear of the roof of the west chamber, and upon the battlements on the east side. In the south end, above the two narrow windows mentioned, is a third smaller one, as though to light a roof of high pitch. There are no corbels for principals, and no holes for main beams, but above the corbel table on each side is a range of holes, about 9 in. square, and as much apart, neatly stopped with ashlar, as though an original flat roof had been removed, and a roof of high pitch introduced. However this may have been, the windows of the side walls are clearly additional, and belonged to a second floor. Altogether the history of this roof is very obscure, and demands a close local investigation. The upper door in the well stair is not at a level to suit a second floor, nor consistent with a high-pitched roof.

First floor, west side. In the north end is a round-headed window, 2 ft. opening, by 7 ft. high, and a door into a now inaccessible mural chamber in the north-west angle. At the south end are two similar windows, and a door into a chamber in the south-west angle. In the east wall are the two broken doorways already mentioned, and the broken tunnels of two, if not of three large fireplaces, the shafts of which, much broken, still rise clear of the roof. The fireplaces are gone, and the wall has been much patched recently to give it support. There are two rather curious lockers in this wall. In the west wall there seem to have been four round-headed windows of 2 ft. opening, and 7 ft. high, and near the middle is a door opening into the middle buttress tower, which contains two chambers of unequal size. These are not accessible, but one was probably a large garderobe, and the other may have been the way to a small drawbridge, opening from the keep upon a rectangular tower in the ward, not 12 ft. distant, so as to give direct passage from the keep to the outer walls. In the keep wall, north of this tower, is a large segmental-arched window, evidently an insertion, probably the work of Rich. III. In the north-west and south-west angles, as already mentioned, are mural chambers, not accessible. There do not appear to be any galleries in the wall.

This west chamber was probably divided by a brattice, and the north part used as a withdrawing-room from the hall. There does not appear to have been a second floor on this side. It is, however, curious that there should be no corbels, nor any of the usual indications of the principals of an ordinary open roof. In each side wall, high up, is a row of holes, about 9 in. square and 18 in. from centre to centre, so that probably the roof was flat, or, at any rate, was composed of heavy rafters, without principals.

The east face of the keep was occupied by the barbican or tower of entrance, and which, as was not uncommon, contained the chapel.

The approach seems to have been, as at Rochester, Scarborough, and elsewhere, by a flight of stone steps built against the wall, commencing, in this case, about 10 ft. from its northern end, and rising about 20 ft. to a vestibule, upon which opened, right and left, the great door of the keep, and that of the chapel. The staircase was about 9 ft. broad, and 45 ft. or 50 ft. long to the vestibule. It seems to have been protected by a side wall, reducing the actual stair-breadth to (say) 5 ft. or 6 ft., and to have been either vaulted or roofed with timber. Its lower gate must have opened beneath a small tower, the battlements of which were reached from the chamber in the north-east angle of the keep. About half-way up the staircase, past what, from the appearance of the wall, seems to have been a second gate, in the keep wall is a large cavity capable of holding comfortably twenty men, evidently as a guard in case the entrance should be forced. Higher up, where the staircase landed on the vestibule, there seems to have been a third door.

The vestibule is part of the second floor of the usual rectangular barbican tower built against the keep, about 12 ft. from the south end of the east face. This tower measures about 33 ft. north and south, and about 48 ft. east and west. It rose about two-thirds of the height of the keep, and is divided into a basement or sub-crypt, an upper crypt, and a chapel and vestibule floor.

The basement is at the ground level. Next the keep, or, rather, next the solid mass of masonry which supports the stairs and vestibule, is the sub-crypt, 20 ft. north and south, by 24 ft. east and west. Beyond, that is east of it, a passage runs right through the building, 5 ft. broad, with a door at each end; and beyond this are the ruins of a small chamber, which probably reached to the outer curtain wall. The passage gave a communication between the north and south parts of the ward, otherwise divided, on this side, by the barbican tower, and from this passage a door led into the sub-crypt. This room was vaulted in two lines in eight bays, springing from a central line of three columns now gone. The arch gables show that the vault was round-headed. In the south wall at the west end is a well-stair leading to the upper crypt, and the only way to it. The sub-crypt is lighted by two small round-headed Norman windows in each of the two open faces, one on each side of an exterior plain pilaster buttress, 3 ft. broad by 3 ft. deep.

The first floor, or upper crypt, extended eastward over the passage the whole length of the barbican, and was 20 ft. broad, and probably 40 ft. long inside. This also was vaulted, but the vault spanned the whole breadth, and formed two bays only. The ribs of the groining sprang from half-round mural pilasters. In the north wall, near the east end, is a fireplace. This floor had no communication with that above it. It was not uncommon for the basement of the barbican to be quite independent of the keep, and to be entered, as here, by an outer door of its own.

The second floor of the barbican contained the chapel and the vestibule, this floor being on the level of the great entrance to the keep. Whether the vestibule was vaulted is uncertain, probably it was. It is about 20 ft. north and south by 9 ft. east and west, the entrance stair arriving at the north end, the keep door being on the west, and the chapel door on the east side. The chapel was loftier and vaulted in a lighter style than the crypts below. Its walls were 7 ft. thick, and its area about 20 ft. by 40 ft. It was vaulted in two bays in a light style, probably Early English. The great door of the keep was plain Norman, but chamfered round the head and jambs. There are traces of caps, and probably there were two flanking shafts, but no mouldings or drip-stone. The walls of the barbican are, no doubt, mainly original, though the vaulting of the sub-crypt and crypt may have been renewed. The chapel probably replaces an earlier building.

Middleham seems never to have had any works beyond the *enceinte* wall, save a slight ditch, of which traces remain on the south side only. On the east, a field road has superseded the ditch, as have some modern buildings on the west side. There is no present trace of either ditch or drawbridge on the north or town front.

The keep is built of coursed rubble, with ashlar groins and dressings. The Decorated and later work is mostly of excellent ashlar.

As regards the age of the several parts of the castle, the keep is plainly late Norman, and, likely enough, the work of Robert Fitz-Ranulph, Lord of Middleham, in 1190; and to his immediate descendants are certainly due the earlier alterations, especially the chapel, before the extinction of the family, in 1251.

No doubt the exterior ward is built on the side of a Norman *enceinte*, and some of the original work may remain; but this part of the fortress was completely recast by the Neviles, who married the Fitz-Ranulph heiress, and, no doubt, either by Robert, called the Peacock of the North, who had Middleham, &c., from his grandmother, and who died before 5 Ed. II., 1331, or by Ralph, Lord Nevile of Raby, his brother and successor, who died 41 Ed. III., 1367.

Of the later residence of Richard, Duke of York (Rich. III.) the traces are the large window opening on the west face of the keep, and perhaps the upper story on the east side of the same building, and certain details added to the ward.

Middleham was a part of the broad territory granted by the Conqueror to Alan Fergaunt, the founder of Richmond Castle, and lord of that extensive honour, stepping thus into the seat of the English Earl Edwin, which he shifted from the adjacent Gilling. His younger son, Ribald, had Middleham for his especial lordship, by the gift of the second Alan, his brother. Ribald was followed by Ralph, his son, and he by Robert Fitz-Ralph, or Ranulph, who married Berta, niece of Ranulph de Glanvill, and is the reputed builder of Middleham keep in 1191, 2 and 3 Rich. I.

Ranulph Fitz-Robert was the founder of Coverham Abbey, "Near his manor-house of Middleham," and was there buried in 1251 (31 Hen. III.), leaving Ralph Fitz-Ranulph, his son, who appears to have been lord of Middleham Manor in an inquisition for the partition of his lands (55 Hen. III.), the year of his death. He left three daughters co-heirs, of whom, Mary, the eldest, married Robert de Nevile, and had Middleham. Ralph died (55 Hen. III.) 1271. It appears, by an inquisition under the name of Peter of Savoy, that Middleham was a fee owing suit of court to the honour of Richmond. 18 Ed. I., Maria de Nevile is styled Domina de Middleham, and 13 Ed. II. she had the manor. She lived till 14 Ed. II. (1320), having held Middleham for life.

Their son was Ralph Nevile, who died 5 Ed. III. (1331), and who appears in an inquisition (1 Ed. III.) as holding Middleham Manor and Castle. His son, Robert Nevile, the Peacock of the North, had from his grandmother the castle and manor of Middleham. He died, without issue, before his father, leaving Ralph his brother and heir, who died 41 Ed. III. This Ralph, Lord Nevile of Raby, took a very active part in all the public transactions of his time, both in war and peace. He died seized of the castle and manor of Middleham, and was the first layman buried in the Cathedral of Durham.

The next lord was John, his son, also a great soldier and diplomatist. He died 12 Rich. II., 1388, leaving Ralph, his son and heir, who added to the wealth and power of the family, and also held the castle, manor, and lordship of Middleham at his death in 4 Hen. VI., 1425. John, son of Ralph, died before his father, 1423, who was succeeded by his grandson, Ralph, Earl of Westmoreland, who died 2 Rich. III. Middleham, however, had passed to Richard Nevile, Earl of Salisbury, son of Earl Ralph, who died 4 Hen. VI., by his second wife, a daughter of John of Gaunt. The Earl of Salisbury, by an inquisition of 12 Rich. II., had then Middleham. This is the earl who, in 37 Hen. VI., marched with 4,000 men from Middleham into Lancashire on his way to London, to obtain redress from the King and Queen for injuries done to his son. On this earl's forfeiture, before 38 Hen. VI., his Lancastrian kinsman, Sir John Nevile, was made constable of Middleham Castle, then in the Crown. Sir John fell at Towton, 1 Ed. IV., and his son Ralph became Earl of Westmoreland. But Middleham remained in the Crown.

At Middleham, then in charge of Nevile, Archbishop of York, Edward IV. was confined by Richard, Earl of Warwick, the prelate's brother. Edward escaped when hunting in the park. After Barnet the castle was granted to Richard Duke of Gloucester, to the exclusion of the male heirs of the Marquis Montagu, Warwick's brother. Richard was much here; raised the rectory to a deanery, with a view to the foundation of a college; and here his son Edward, Prince of Wales, was born. After Richard's death, Middleham fell to the Crown, and was leased to various persons. Finally it was sold to Mr. Wood, of Littleton, ancestor of the present owner, General Wood. Recently the keep has been partially cleared of rubbish, and some of the most dangerous portions have been underpinned; but a little more assistance of the same character is much needed, to save some of the most prominent features of the ruin from destruction.

G. T. C.

CONGREGATIONAL CHAPEL AND SCHOOL, THAME.

This building was opened for public worship at the end of last year. It is in the Geometric tyle, and the materials of construction are local stone, with Bath stone supplied by Messrs. Randall & Saunders for the dressings.

The internal dimensions of the chapel are 32 ft. 10 in. by 62 ft. 9 in., in addition to the organ recess at the back.

The accommodation, inclusive of an end gallery, is for 450 adults. The minister's desk is on a raised semicircular platform in front of the organ. The two seats immediately near the platform follow its curve. The ceiling line is about one-third down the roof. In the centre the height is 34 ft. 9 in., and at the sides 22 ft. The roof principals are visible below the ceiling line, and they, as well as all other visible woodwork, are stained and varnished. Simple distemper enrichments are introduced round the window-heads, organ recess, and ceiling panels. The lighting is by ten gas pendants.

The space under the chapel is appropriated to a school, 32 ft. 10 in. by 51 ft. 6 in.; a classroom, 13 ft. 4 in. by 17 ft.; a minister's vestry, 9 ft. 4 in. by 11 ft. 9 in.; and the vault for heating apparatus. The chapel floor being 6 ft. above the ground level, every part of the basement is light and well ventilated.

The heating is effected by Haden's warm-air system.

The total cost of chapel and school, exclusive of site, but including heating, lighting, and fencing, will be about 1,500*l.*

The architect is Mr. W. F. Poulton.

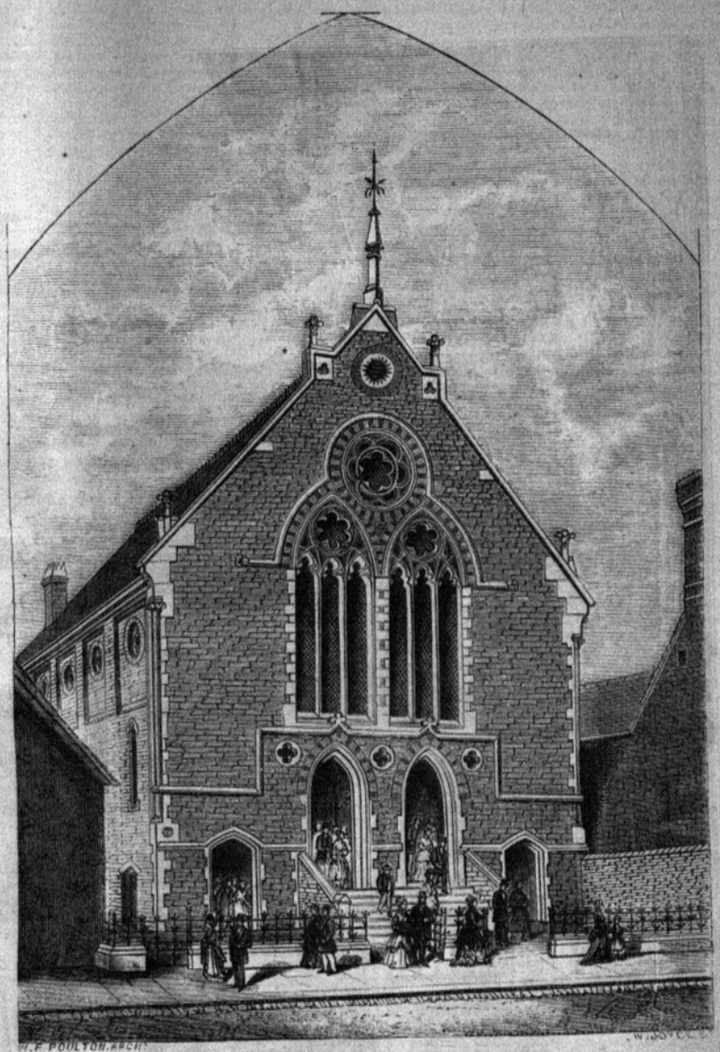
CAMBERWELL NEW VESTRY HALL.

We publish in our present number a view and plan of the ground-floor of proposed Vestry Hall for Camberwell. This design was selected in open competition. The style is French Italian, and the principal front facing the Peckham High-road will be executed in stone. The building throughout will be of fireproof construction. On the first floor are arranged two committee-rooms in the front. The Vestry Hall, 47 ft. by 42 ft., is placed at the rear, and lighted by means of a skylight and side windows.

The awkward nature of the site, and the specific requirements of the Vestry, are urged as reasons for the shape of some of the rooms: we seriously recommend a revision notwithstanding.

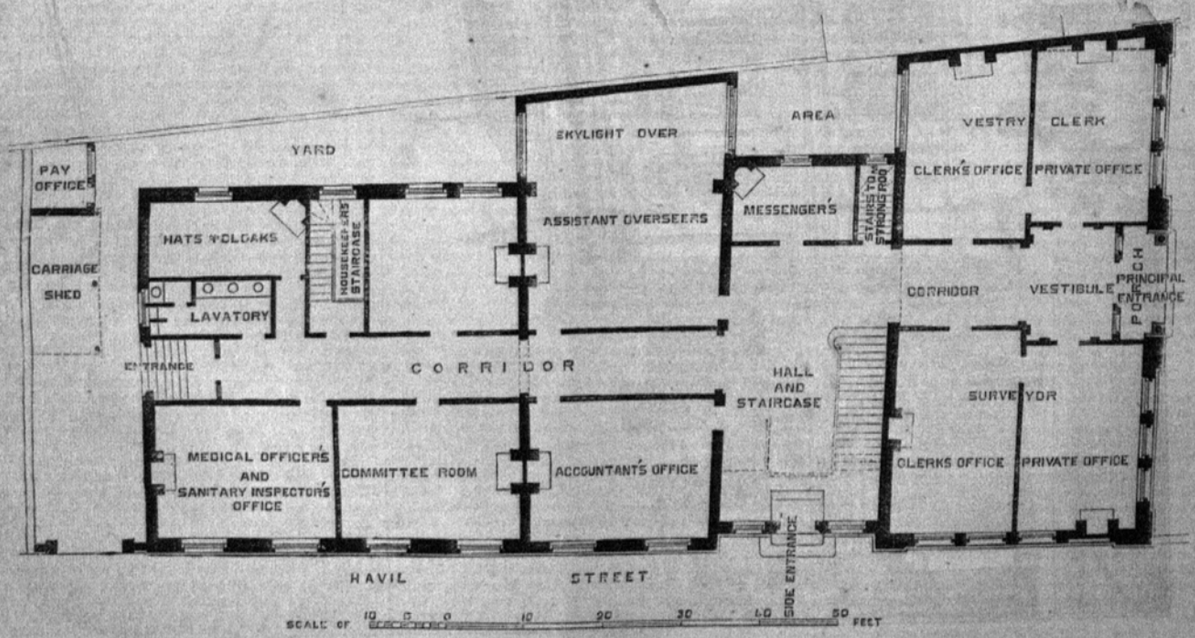
The estimated cost is 8,000*l.*: tenders for the works are about to be sent in.

The architect is Mr. Edward Power.

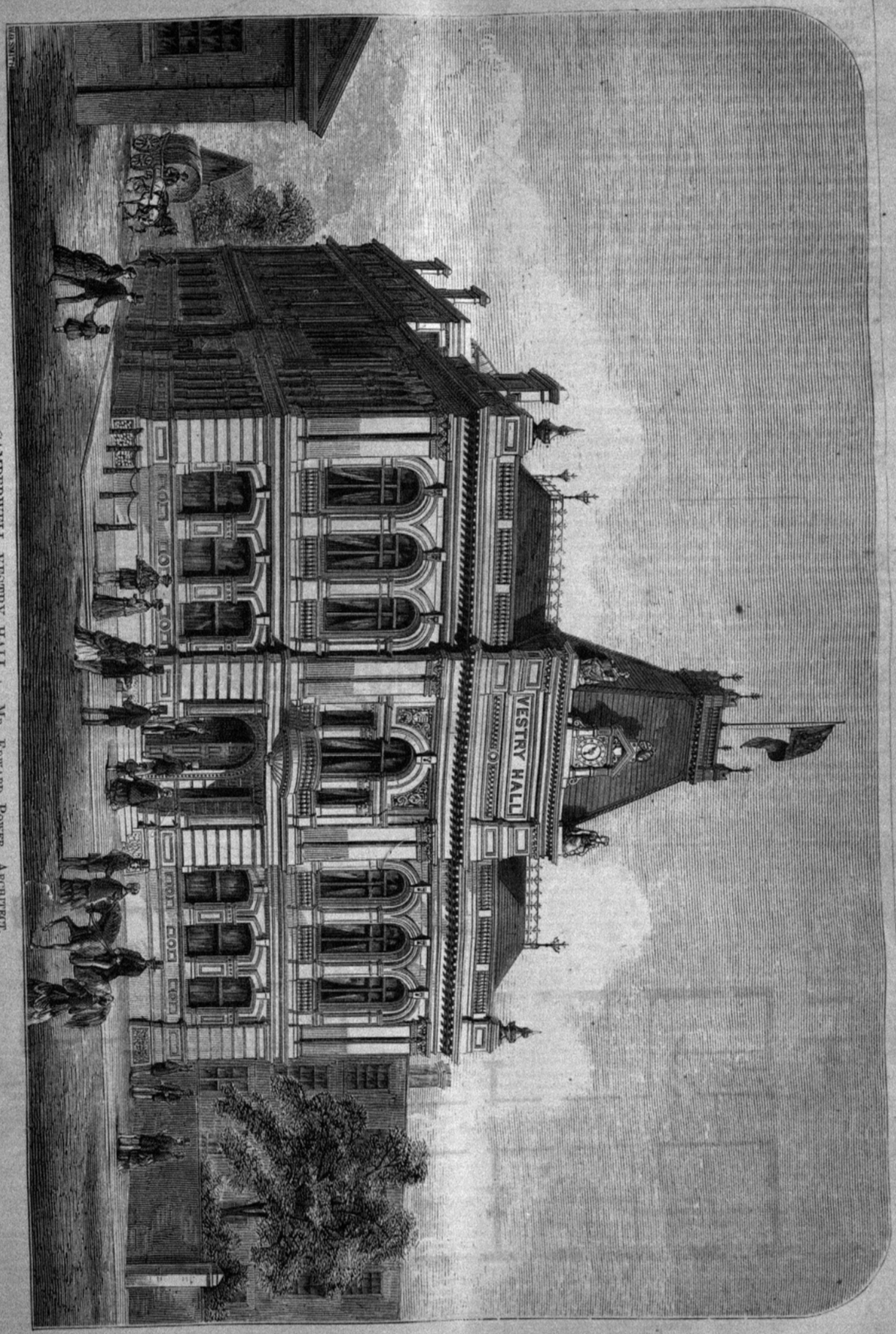


CONGREGATIONAL CHURCH AND SCHOOLS, THAME.

Mr. Poulton, Architect.



CAMBERWELL NEW VESTRY HALL.—*Plan of Ground Floor.*



CAMBERWELL VESTRY HALL.—MR. EDWARD POWER, ARCHITECT.

REREDOS IN PEDMORE CHURCH, NEAR STOURBRIDGE.

THIS church, which has recently been rebuilt, has just now received a reredos, after a design by Mr. F. Preedy, of London, architect. The principal part of the reredos is of a light-coloured alabaster, which material forms the background above the level of the table, and in which is worked a series of canopies, supported by coloured Irish marble shafts, and containing sculptured figures of the four Evangelists, the latter being of a whiter tint than the ground-work. The central and most conspicuous object is the *Agnus Dei* standing on the Mount of Paradise, and from beneath his feet issue the four mystic streams; this panel, and one on either side of it, containing the Alpha and Omega, and other symbolic ornaments, are worked in Venetian mosaic, on gold grounds of the same material; as are also other smaller panels in the sides of the reredos, representing the sacred monograms, and other emblems, on blue and red grounds. The lower part at the sides of the table is built in bands of Caen stone and alabaster, the stone inlaid in ornamental patterns, with coloured marbles and cements.

The carving, inlay, stone, and alabaster work has been successfully executed by Mr. Boulton, of Cheltenham, carver. The mosaic work is from the architect's studio. The reredos (as explained on a brass plate placed in the side wall of the chancel) has been erected by Miss Hunt, a former parishioner, but now of Brookfield, Bellbroughton.

THE THEORY OF THE BEAUTIFUL.

A LECTURE was lately delivered in the lecture-hall of Trinity College on the above subject, during which the lecturer, Professor Todhunter gave expression to the following, seeming to prove that the Beautiful was merely a theory, without any defined or known laws to govern its action,—a theory very disputable:—

"To some extent" (said the Professor) "each man has his own ideas of beauty, and there is no recognised authority to which we can refer for guidance. We find, however, an approach to unanimity in all ethical judgments, and in æsthetic judgment there is still a greater approach to it. The æsthetic conscience may be awakened and convicted of sin, just as the ethical conscience is; and the more æsthetic men are, the more unanimous in their judgment will they become. It would appear that there is a certain catholicity in ideas of beauty, and that an unsophisticated mind may apprehend the beautiful when fairly confronted with it. Two categories might be made of the beautiful,—first that of form and colour; second, that of rhythm and sound. The phenomena produced in us by a beautiful object might be summed up in one word,—Joy. The emotion of the beautiful has something of a sympathetic character. It is contemplative instead of active. It has, moreover, as Ruskin says, an element of worship in it, and underlying the delight an element of melancholy. We yearn to absorb things useful into our personality; we yearn to be absorbed into the beautiful [in what way?]. The beautiful is the revelation of the divine purpose in creation; the ugly, the revelation of the chaotic disorder of things, the disorder which tends to the decay of all loveliness, the production of lower and lower types of life, a revelation of the kingdom of darkness of Satan. The beautiful and the sublime express different ideas in the cosmical order of things,—the beautiful may be regarded as the resolution of discord; the sublime, as discord unresolved, but suggesting its resolution. The pretty and the grotesque are derived respectively from the beautiful and the sublime."

The Professor reminded his hearers in the beginning, that the subject was one of the deepest questions in metaphysics, and at the conclusion he gave his audience an instance of the difference between the sublime and the grotesque by pointing to a portion from the Book of Job, and comparing it with a passage from Goëthe's "Faust." As an abstract theory or series of ideas about the beautiful in nature, the passage we quote of the lecturer may be good enough, accepting the old and common belief that "every eye forms its own beauty," but in the matter of art the theory of the Professor would be an unsafe theory. And in answer to him, we submit that there is a recognised authority or authorities for guidance in the matter of the beautiful in relation to art. For instance, without proportion in architecture there can be no true harmony, and without harmony there is very little real beauty. A very intelligent and even learned man in many ways may have a joy excited within him at beholding a supposed work of art: it may be a painting or it may be an actual building. In common parlance, his joy may only be another name for the emotion the supposed grandeur of the edifice awakens to his senses. Yet the building or the painting may have little or nothing of art in its composition. The same object or objects to a professional eye instead of creating joy, might produce disgust. Joy is not the consequence of beholding the beautiful, except in a conditional or limited sense. If joy is experienced by the true artistic and professional eye, the work may be assumed to be a work of merit or art, but if otherwise the emotion is felt, it cannot be said to be due to the phenomenon that is said to arise on beholding the object of one's admiration or joyousness. A knowledge of the laws, the proportions, the harmony, and the composition, is necessary before we can pronounce an object artistically beautiful at least.

CHORLEY NEW TOWN-HALL COMPETITION.

NOTHING has yet been decided about these plans. The Improvement Commissioners have devoted some time in the examination of the drawings, and have held several meetings respecting them; but they have been unable to come to a decision upon the merits of the plans, and have at length determined upon calling in the assistance of an architect, so that it is expected an award will very shortly be made.

COMPETITIONS.

Trent Bridge Cricket Ground.—In the competition for the new Cricket Pavilion for the Trent Bridge Cricket Ground (the famous Nottingham Cricket Club's home), the design submitted by Mr. S. Dutton Walker has been selected.

Tiverton Land Company.—The Directors of the Tiverton Land and Building Company having advertised for plans for laying out their estate, at an adjourned meeting held on Tuesday, at the Town-hall, under the chairmanship of Mr. J. H. Amory, M.P., awarded the first premium of 20*l.* to Mr. C. J. Phipps, of Mecklenburgh-square, London; and the second, of 5*l.*, to Mr. J. Chudleigh, jun., of Newton Abbot. They have also appointed Mr. Phipps architect to the company, and instructed him to proceed with the erection of four pairs of semi-detached villas.

The Fareham Villas Competition.—The competition for villas at Fareham, Hants, has been decided by the selection of a design prepared by Mr. D. J. Brooks, of Kennington-road.

LEEDS UNION INFIRMARY.

THE foundation-stone of a new infirmary for the accommodation of the sick inmates of the Leeds Union Workhouse has been laid by Mrs. Middleton, the wife of the chairman of the Board of Guardians. The erection of this building has become necessary owing to the existing infirmary having, by reason of the increase of population, and the formation of the Leeds Union, ceased to be adequate to the necessities of the union.

About two years ago the guardians issued a general invitation to architects, by advertisement, to compete for the erection of a new Union Hospital, the conditions being that the structure should be designed upon the Pavilion principle, and with an allowance of not less than 1,200 cubic feet of space per bed. Twenty-seven sets of designs were sent in, and that of Mr. Henry Walker, of East Parade, Leeds, was chosen from amongst them for execution. The selected design, however, met with disapproval on being submitted to Dr. Smith, the medical officer of the Poor-Law Board, who saw no necessity for isolation in a workhouse hospital, or for an allowance of more than 800 cubic feet of space per bed; and after several interviews and much correspondence and delay, the guardians have been obliged, though very reluctantly, to abandon the Pavilion principle (upon what grounds we should like to know), and to submit to a modification of the design in other respects, in order to obtain the sanction of the Poor-law Board. The design now being carried out, prepared by Mr. Walker, in accordance with the requirements of the Poor-law Board, is based on the block system, and the main building comprises separate suites of wards for male and female patients, with administrative departments between. The hospital is three stories in height, and has a frontage of 342 ft. It is arranged for 216 beds, exclusive of attendants. The central portion contains accommodation for nurses, chaplain, and dispenser, and also includes ward-sculleries, hoist, and separate staircases and conveniences to the wards. The kitchens, &c., are built at the rear, and connected on the ground-floor to the main building by corridors. The wards for each sex are alike, those on either side consisting of nine compartments, arranged in suites of three on each floor, and the compartments of each suite communicating with each other, as well as with a day-room at the end, by means of large doors. Each compartment will have a double stove, with descending flue in the centre; and Potts's system of ventilation is to be adopted. Each day-room has separate conveniences immediately attached. The beds are ranged on each side, in pairs, between the windows. The design is of a Gothic character, in agreement with the architecture of the surrounding buildings, and will be executed in brick, with sandstone dressings; and the contractors are:—Messrs. Thos. Whiteley, mason and bricklayer; Thos. Hall & Co., joiners and carpenters; Thos. Storey, plumber; Heaps & Robinson, iron-founders; Wm. Pycock & Son, slaters; H. Orange, plasterer. The contracts amount altogether to about 14,000*l.*, not including furnishing, &c. The Poor-law Board have sanctioned the expenditure on the new edifice of the sum of 17,000*l.*

OUR NEW ORGANS.

SIR,—Can you do anything towards improving modern organs? What are they made of? Not the sonorous Baltic timber, but spruce and American pine, full of knots and shakes, glue-sized inside to fill the cracks; mouths, one-fourth, and some one-third, of the width; so that nothing short of a pair of bellows such as are fit for a blacksmith, could fetch a groan out of them. And the public think this music. Why? Because they know not the rich and beautiful tones that are only to be heard in the very few existing instruments worthy of the name of an organ. What about the modern metal pipes? This, I am sorry to say, is (next to the tuning) the most abominable part of these instruments,—organs I cannot call them. Instead of tin and lead with the silver, it is lead without the silver, with little or no tin, and—listen—antimony, to make the metal hard. There is still the execrable system of equal temperament to be spoken about, and the erroneously formed bellows.

AN ORGANIST.

THE SURREY GARDENS RE-CONSTRUCTION AND THE MAGISTRATES.

WE have already noticed in the *Builder* the extensive alterations and new buildings now in progress at the Surrey Gardens with the view of their shortly being opened to the public. These new works include, amongst others, the conversion of the large music-hall into a spacious theatre, the erection of a menagerie, and other buildings. Mr. Strange, the new proprietor, has just applied to the magistrates for a licence, and they last week refused it, on the opposition of Mr. Spurgeon (who formerly preached there before the erection of his Tabernacle) and a number of the inhabitants of the neighbourhood. Within the last few days the decision of the magistrates appears to have created a considerable amount of dissatisfaction amongst a portion of the residents in the district, who complain that it is somewhat harsh, considering the large amount of money which Mr. Strange is expending in the new buildings.

RE-OPENING OF ST. GILES'S CHURCH, SHREWSBURY.

THIS church, which has been closed for some time past, in consequence of the carrying out of extensive alterations and additions, which have become necessary from the increasing population of the district, has been reopened for divine service. The chancel being old and in a dilapidated state, it has been taken down and rebuilt at the cost of a resident in the parish; a chancel aisle containing a vestry and space for an organ has also been built; and the nave and north aisle has been lengthened by one bay. These alterations give 130 additional sittings, and they improve the appearance of the church. The architect employed was Mr. J. Lawrence Randal, of this town; and the work has been carried out by Messrs. Everall & Morris. The masonry was executed by Mr. J. Maddock. A stained glass window, which was erected a few years back, by O'Conner, in memory of the late Mr. W. W. How, has been removed from the west end of the aisle

and re-fixed in the east window of the new chancel; and the glass from the east windows of the old chancel has been re-arranged and incorporated in other windows. A two-light window on the south side of the chancel has been filled with stained glass, by Ward & Hughes, as a memorial of the late Mr. Thomas Howells, of Highfields, and the old window containing the figure of St. Giles has been placed in the north side of the new chancel. In the west end of the nave two new windows have been inserted, and it is anticipated that a stained-glass window will, before long, be placed in the aisle in memory of the late Mr. R. Bryan Smith. The chancel and sanctuary are laid with tiles from the manufactory of Messrs. Minton, Hollins, & Co., of Stoke-upon-Trent. The wood and stone carving are the work of Mr. G. Landucci. The windows have been glazed by Messrs. Done & Davies; and the chancel will be heated with hot-air stoves, erected by Mr. Dodwell; so that the whole of the work, as far as possible, has been executed by tradesmen of the town. Owing to the strike which has recently taken place among the builders of the town and some other causes, the work in the interior of the church is not yet altogether completed.

BRITISH AND BELGIAN MARBLES.

Sir,—Without reference to any particular work, or desire to say anything that might seem captious, I wish to ask a few questions in the interest of our native materials:—

1. Can the Belgian black marble be got in sufficiently large sizes, free from treacherous, almost invisible, rents, to warrant any architect using it for decorative purposes in an important building?

2. Are there not marbles in Devonshire, the Midland Counties, Ireland, and another place at the edge of the world, viz., Wales, which far surpass the ordinary Belgian specimens for strength and beauty?

3. Cannot these British marbles be worked in Great Britain at 20 per cent. less in cost than marbles can be by Belgian or French masons?

4. Are the Government and our architects sufficiently alive to the interests of the masons of Great Britain?

5. Cannot the master masons of London give their men 9d. per hour and nine hours per day, and accomplish my question No. 3?

If some one will kindly answer these few plain questions, he will oblige a twenty years' master mason from the Banker.

SUN DIALS.

Prefacing some notes on Sun Dials in Derbyshire, Mr. George Roberts, of Lofthouse, Wakefield, says:—The materials for the history of the sun-dial are somewhat scanty. Ahaz, King of Judah, who lived about 740 B.C. had a dial (Isaiah xxxviii.). The Greeks had dials 550 years B.C., and Pliny says that Anaximander, the Greek philosopher, was the inventor. The Romans had both the dial and the clepsydra, an instrument by which time was marked by the running of water or sand from one vessel to another: they erected dials in their public squares and walks and their temples, and most probably introduced them into Britain. I cannot discover that the Druids had any sun-dials. The ancient inhabitants of Mexico and Peru had a sort of rude-dial, by which they ascertained the hour of the day and period of the solstices. The different kinds of sun-dials were the only astronomical instruments which the Aztecs and Incas possessed. The clepsydra, the sand-glass, and subsequently the clock, succeeded the dial, which was inconvenient as it only marked time in sunny weather. The Romans had a motto expressive of this inefficiency—"I only count the hours of sunshine." The venerable instrument is now so rapidly going out of use, especially on churches, that in another century it will be as rare as are the May-poles. Though not now commonly useful, it is worthy of respect as antiquity, and ought to be looked upon as a superannuated servant, grey with age and full of honour, for assuredly it was more faithful and certain than many of the complex instruments which have succeeded it.

Exhibitions.—The private view both of the "Society of Painters in Water-colours" and the "Institute of Painters in Water-colours" will take place on Saturday, the 20th inst.

CHURCH-BUILDING NEWS.

Oswestry.—It has been resolved to employ Mr. Street in restoring the parish church. A sum of 3,325*l.*, out of a total of 7,586*l.*, as the estimated cost, has already been subscribed at one meeting. Mr. Street's report of the necessary alterations, renewals, and restorations gives the following items:—Nave—new roofs, 1,815*l.*; new columns, arches, &c., 1,200*l.*; new oak seats, 1,275*l.*; new vestry, 250*l.*; new floors, 400*l.*; sundries, 260*l.*; warming and lighting, 400*l.* Interior of nave—Repairs of stonework, new windows, copings, crossings, openings, lower stage of tower, drainage, and new south porch, &c., 780*l.* Chancel and chancel aisles—ceilings, 240*l.*; floors and steps, 204*l.*; chancel seats and screens, 420*l.*; children's seats, 112*l.*; repairs of windows and walls, new south door, &c., 230*l.*—total, 7,586*l.* Some of these items were capable of reduction, if necessary.

Limpsfield.—The parish church has been re-opened, after having undergone a restoration. Previously, the whole of the external walls were covered with plaster, which has now been removed, and the rubble work has been pointed. The interior was completely blocked with large pews, whilst a gallery stretched along the west side projecting far into the church and obscuring the windows. The whole of the inside fittings have now been taken down, and in place of them open sittings of oak have been erected throughout the church. The tower, which is massive, rests upon three arches; the belfry windows which had been in part built up, have now been restored to their original length; the brickwork which blocked up the northern and western arches has been removed; a new window inserted in the south wall, and the whole thrown into the church. The chancel, at the east end, in place of a late three-light Perpendicular window, has now a triple lancet, two jambs of which were found in the wall. The north chancel was restored in 1870, at the expense of the Lord of the Manor; it has at the east end a triple lancet window, exactly similar to that in the principal chancel, the old jambs here also having been found bedded in the wall. The lights are filled with stained glass, the subjects the twelve Apostles. It is a memorial window, presented by Mrs. Leveson-Gower. The church is capable of yet further improvement. Mr. J. L. Pearson was the architect employed.

Darlaston.—The new church of All Saints, Darlaston (the Mills Memorial Church), has been consecrated by the Bishop of Lichfield. The church has been erected solely at the cost of the Mills family, in memory of the late Samuel Mills, ironmaster, of Darlaston. The edifice occupies 3,364 square yards of land, near the high road. It is in the Early English style, and is built of red brick, with Bromsgrove stone dressings. The roof is covered with Broseley tiles, and the western doorway is surmounted with a bell-turret, containing two bells. The interior arrangements consist of a nave and two aisles, a chancel and chancel aisle, and a vestry; and an arcade of pointed arches, separating each aisle from the nave. The Bromsgrove stone pillars, from which the arch springs, bear carved foliated capitals, the work of Mr. Earp, of London. The roof is open-timbered. The chancel seats are of English oak, and those in the body of the church, all being free, are of pitch pine. The pulpit is of Bromsgrove stone, octagonal in form, with open panels, and the outer angles bear the heads of the four Evangelists. The chancel and nave are inlaid with Godwin's encaustic tiles. A series of two-light windows in keeping with the general design give light by day, while by night the building will be lighted with gas. The gas-fittings were supplied by Messrs. Potter & Son, of London; the heating apparatus by Messrs. Haden, of Trowbridge. Accommodation is provided for about 520 persons. The cost of the edifice amounted to 5,000*l.* The architect was Mr. G. Street, R.A., London; the builder, Mr. H. Lovatt, Wolverhampton; and the clerk of works, Mr. W. H. Williams.

Crewe.—The new chancel of St. Paul's Church, which, with an organ-chamber and organ, has been lately added to this edifice, has been consecrated by the Bishop of Chester. The organ is new, having been recently built by Messrs. Wadsworth, of Manchester. The chancel is built in the Gothic style, in accordance with the rest of the building, and the floor is paved with Minton tiles. The supports to the roof, which is of wood, are carved, the ends of the buttresses having figures of angels bearing shields, on the face of which are various ecclesiastical devices. The walls behind and around the communion-table are inlaid with tesselated work; and at the entrance to the chancel the choir is situated. A stained window has also been placed at the east end of the church. It consists of five lights, the centre containing a representation of the Crucifixion; and in this work of art the distance views of Jerusalem and the Mount of Olives are prominent features. The lights at the right hand contain pictures of the Nativity and Baptism of Christ, and the left hand shows the Entombment, and the discovery by the woman of the departure of Christ. In a circular light, at the top of the window, the Ascension is the subject treated.

Amersham.—The parish church of St. Mary, Amersham, has been re-opened by the Bishop of the diocese, after a restoration of the interior and the erection of a new chancel aisle. The restoration has been carried out from the designs of Mr. Preedy, architect; and the cost has amounted to about 3,300*l.*, exclusive of the cost of font, altar-cloth, reredos, pulpit, and lectern, which were presented to the church. The completion of the work thus far is mainly due to Mrs. Tyrwhitt Drake. The church is supposed to be built on a Norman foundation, as fragments of late Norman work have been found. The style of architecture is of the Perpendicular character; the greater part is fourteenth-century work, but the piers, arches, &c., date from a period a century earlier. The east window has been raised nearly 4 ft., and deepened about 2 ft., and the floor of the sanctuary has been raised about 18 in. The chancel arch and roof have been raised, and the plaster ceiling replaced by a wooden groined roof. The organ has been removed from the old west gallery, and placed in the chancel aisle, and the choir are seated in the chancel. All the galleries have been taken away, and the plaster removed from the roof of nave, transepts, and aisles; the old principals are left, and the ancient boarding under the rafters shown; the decayed corbels have been renewed and carved. Two stilted arches of peculiar shape were accidentally discovered and opened out. The piers on the south side appear to be of earlier date than those on the north, and are of more elegant shape; all have been taken out, and the stone re-worked or replaced by new material. The clearstory windows had no tracery, but the original tracery was found, and copied in the present windows. All the windows have been taken out, and with very few exceptions the present windows have been copied from the tracery found during the restoration. The church is heated by hot water apparatus, furnished by Mr. Skinner, of Bristol. The stonework has been carried out by Messrs. Whitehead, of Aylesbury; the stone carving by Mr. Edward Whitehead; the wood carvings by Mr. Bromfield, of London. The contractor for the whole of the work is Mr. Cooper, of Aylesbury. The architect employed is Mr. Preedy, of London. Further restorations of the exterior and of the tower are proposed, for which an additional sum of 1,000*l.* is required.

Beddington.—A temporary wooden church at Bandon-hill has been opened by the Bishop of Winchester. The church, which is built from a design of Mr. Richard Martin, of Caterham, is 100 ft. long, by 24 ft. wide; the nave is 60 ft. in length, the north and south transepts 10 ft. by 20 ft., and the vestry and organ-chamber each 10 ft. by 10 ft. The roofs are 32 ft. high, surmounted by a spire 60 ft. high from the ground line. The chancel is apsidal, and contains a large five-light stained window, by Clayton & Bell; the floors are laid with Maw's tesselated pavement, and it is calculated that the building will accommodate 350 persons. Messrs. Taylor & Son, of Bromley, have carried out the work, the cost of which has been defrayed by the rector, the Rev. A. H. Bridges.

Thorne and Hatfield.—A meeting of the seat-holders in the parish church has been held, to consider the report of Mr. Jackson, of London, on the question of taking down the west gallery of the church, and opening out the old arches at the west end of the edifice now bricked up, &c. The projected improvements are estimated to cost 230*l.* Ultimately, the architect's plan was adopted, and a committee appointed to confer with the seatholders in the west gallery, who will have new seats provided for them under the tower, to collect subscriptions, and afterwards to see to the efficient carrying out of the work.

Ainstable.—The old parish church of Ainstable was given up last April to the architect and

builders to be pulled down and completely re-built. The new church was finished in the February of this year, and has now been consecrated by the Bishop of the diocese. The church consists of nave, 41 ft. by 26 ft., and chancel, 26 ft. by 20 ft. A tower, 64 ft. in height, is placed with its south-east angle coinciding with the north-west angle of the nave. The lower stage of the tower, having a doorway in its south side, forms an open porch to the church; and an inner closed porch connects the tower with the nave and vestry, thus affording a sheltered entrance to the church, the situation being elevated and exposed to storm. The roof is open-timbered, ceiled to the diagonals above the rafters. The seats in the nave are of pitch-pine, stained and varnished. The pulpit and prayer-desk are of carved oak; the lectern of polished brass. The chancel is completely fitted with oak left unstained and simply rubbed with oil. A short south transept forms an organ-chamber, and affords accommodation for school children. The chancel being occupied by private seats, a small choir has been arranged by placing seats in the east end of the nave facing north and south. The church is warmed by a slow-combustion stove (Musgrave Brothers, Belfast), placed in a chamber under the floor in the choir, and covered with an open grating. The architecture is Early English; the accommodation for 211; and the total cost about 1,400*l.*, raised by voluntary contribution. The architect was Mr. G. Watson, Penrith; the contractors were Messrs. Sproat, Talkin, for masonry; Mr. John Richardson, Penrith, for joinery; Mr. George Bailey, Penrith, for slating; Mr. Porter, Penrith, for plumbing, &c.

Clent.—A new clock, striking hours and quarters, has been placed in the parish church of Clent, Worcestershire. It was supplied from the manufactory of Mr. Smith, of Derby.

Fishponds (Bristol).—The reopening of the parish church of St. Mary's, Fishponds, has been arranged for the 4th of April. During the time it has been closed extensive alterations and improvements have been made. The former chancel, most unsuitable from its size and general character for the purposes of divine worship, has given place to an apse-chancel, more than 30 ft. in length, and having on either side convenient aisles, the intervening wall being carried on arches springing from pillars of blue Pennant stones, surmounted by capitals of carved Bath stone. The interior of the church has been cleared of the pews and seats, which have been replaced by open sittings, with carved finials. The gallery at the west end of the church has been taken away, and the organ is now being erected in the north aisle of the chancel. The south porch has been removed, as also the entrance to the church on that side. The nave, however, remains, with this exception, in the same state as before the alterations were undertaken; but it is hoped that the parishioners will, at no distant period, rebuild this portion of the church, and place it in harmony with the chancel. The cost of the present restoration will amount to about 1,700*l.* The plans have been supplied by Mr. Seddon, of London, architect, and the works have been carried out by Messrs. Yalland & Foster. It is proposed to fill in the seven lancet windows in the chancel with stained glass, from the architect's designs, which are illustrative of the seven gifts of the Holy Spirit. Four of these windows have already been contributed, and will be placed in position prior to the reopening of the church. In addition, Mr. R. L. G. Vassall, Oldbury-court, has promised three windows of stained glass for the south aisle of the church. The organ is in the hands of Mr. Vowles, who is re-erecting it and supplying it with new stops and pedals, and introducing many of the most recent improvements.

Wolverton.—The church has been re-opened. Previously to the alterations the tower was separated entirely, and could not be entered from the body of the church, the intervening space being filled up with arcades of massive brickwork, which formed the ringing-floor. In front of this ringing-floor, but separated by two large doors, which may still be seen within the precincts of the God's-acre, was a gallery, which stretched nearly 12 ft. into the nave. These, the ringing-floor, the gallery, and all the brickwork, have now been removed, and the tower has been thrown open. The length of the church as it is now is 67½ ft., and the breadth is 18 ft. This, of course, does not include the transept. The tower, with its lofty arch, and series of round-headed niches and corbels, is a singular specimen of the era of Sir Christopher Wren. Underneath the arch of the tower stands a new font. The tower has been furnished with new open seats, which, with the improved seating of the nave and transepts, are the work of Messrs. Garrett & Son, Kingsclere. All the carving in the church is the work of Grinling Gibbons or his pupils, and the old oak of that and the pews, now it is renewed and refreshed, is very striking. The windows, instead of being plain with wooden frames, are now divided with red brick mullions. The east window is the work of Messrs. Barraud & Westlake. The chancel side-windows are from Horwood & Sons, Frome. The remaining windows are by Messrs. Powell & Sons, the transept and west windows being quarries, the others cathedral glass. The general carrying out of the work has been completed by Messrs. Wheeler, Brothers, under the supervision of Mr. C. Smith, of Reading.

DISSENTING CHURCH-BUILDING NEWS.

Jarrow.—A church, which has just been completed at Jarrow for the use of the United Presbyterians of that town, has been formally opened for public worship. The structure stands a short distance from the railway station at Jarrow; but from its proportions and its spire it is seen from distant places in the surrounding country. It has been built in the Gothic style of architecture, from the designs of Mr. Joseph John Lish, architect, Newcastle. The plan of the building comprises a nave and two side aisles, with entrance porches and vestibule, there being at the west end a sessions-house, ministers' vestry, lavatory, and heating chamber. The nave roof, which is lofty, is divided by a light arcade, carried on ornamental cast-iron columns, whilst the nave ceiling, which is "coved" its full length, is divided into panel spaces by the roof timbers of the longitudinal ribs, each of the latter being enriched by a perforated wooden cornice. Ventilators are placed continuously along the length of the ceiling, to give exit to the vitiated air and allow of the introduction of fresh air without draught and annoyance; and these, from their design and position, form a feature in the decorative treatment of the interior. The galleries are placed over the side aisles and across the west end, and are approached by roomy stone staircases, each gallery having a separate approach. Provision has been made for the rapid clearance of the church, there being six different exit-doors, all so arranged that the congregation from each division can pass out without intermingling with each other till the outside is reached. The whole of the internal wood-work is pitch pine, varnished, the sittings being without doors. The pulpit, which is placed on a raised platform at the east end of the edifice, is composed of Yorkshire stone, with a moulded string-course and cornice, columns of red stone supporting carved capitals, and the whole being relieved with incised and carved work. Over the pulpit in the east gable there is a three-light window of ornate design, filled in with stained glass. The lower part of the window contains figures illustrating three periods in the life of David, who is represented as a shepherd, as a psalmist, and as a king. The west window and the heads of the side windows are also filled with stained glass. The whole of the glazing has been done by Mr. W. J. Boocr, of Leeds. The gas-fittings, which are of brass and iron, have been designed to harmonise with the architecture of the church. The building has been heated by hot-water apparatus, put in by Messrs. Dinning & Co., Newcastle. The total height of the spire is 135 ft., its junction with the tower being marked with a moulded cornice, having at each angle a carved grotesque of the lizard type. The edifice gives accommodation for 900 adults. It has been erected at a cost of about 3,200*l.*, a large proportion of which sum has already been obtained. The contractor for the work was Mr. Richard Wylam, of Jarrow, and the architect, Mr. Lish. The sub-contractors were:—for slating, Mr. J. Place, North Shields; for iron-founders' work, Messrs. Abbot & Co., Gateshead; for plumbers' and gas-fitters' work, Mr. Thomas Grieve, North Shields; and for painting and staining work, Messrs. Cooper, of Newcastle.

Utley.—A new Independent chapel has been opened at Utley. The edifice stands on the roadside, in the pastoral district, about midway between Keighley and Steeton. There has been no attempt at elaborate ornamentation or striking architectural effects. The edifice is Gothic. The front view shows a doorway, with a two-light window on each side, and a four-light tracery window over. One side has six two-light windows, and the other five, and the whole are glazed with cathedral tinted quarry-glass, with coloured borders. The angle to the right of the entrance is occupied by a tower, which rises a few feet above the apex of the roof. The ground-floor pews have bench-ends and framed doors. A small gallery is placed across the end of the chapel, above the vestibule. The choir is accommodated in a pew which projects from the organ recess, and the front is decorated. A staircase which opens below the pulpit leads to the school underneath, which occupies the whole of the lower portion of the structure; but, on account of the formation of the site upon which it stands, the school is entirely above the level of the surface of the ground. The school consists of one large apartment and three class-rooms, the entire edifice being heated by hot-water pipes. The chapel will accommodate 400 persons, and the school upwards of 250 children. The original estimate was about 2,300*l.*, but the original plan having been extended in its details, this estimate has been exceeded by several hundred pounds. The architect of the building was Mr. George Smith, of Bradford and Keighley.

Luxulyan, Cornwall.—Rosemelling Wesleyan Chapel, in this parish, recently reopened, has undergone internal rearrangement from the designs and under the superintendence of Mr. Silvanus Trevail, of Bodmin; Messrs. Phillipps & Sons, Luxulyan, being the contractors. The upper surface of the seats is concave, and the backs are inclined. A rostrum takes the place of the former pulpit.

Basford.—The foundation stone of a Baptist Chapel for New Basford, has been laid. The site chosen is a large piece of ground in Chapel-street, and the design will be Gothic, with a principal entrance in front, above which will be a window with traced ornaments and a Gothic arch. There will be a small lobby immediately within the entrance, with lights on either side. The side and front entrances give access into a lobby and staircase leading to the gallery. The roof will be built upon timbered semi-circular principals, and the seats will have stall-ends and leaning backs. The platform for the ministers and the communion pews will be surrounded by railings, and there is to be a vestry on both sides of the chapel, which will be heated with hot-water apparatus, and lighted with starlight pendants and ventilated. The cost will be between 900*l.* and 1,000*l.* Mr. Thomas Horsfield, of Halifax, is the architect; and Mr. Ellis, of Nottingham, the contractor.

Manchester.—The Welsh Presbyterian congregation, formerly of Oak-street, have opened their new chapel in Heywood-street, Cheetham. The chapel is built of brick, with stone dressings, the style of architecture being principally Gothic, from plans by Mr. Richard Owens, of Liverpool. The builder was Mr. Thompson, of Cheetham Hill-road. The grounds are laid out with shrubs and trees. The pulpit, pews, and general fittings of the interior are pitch pine. The chapel is seated for about 400 persons. Behind are a school-room, vestries, and house. The cost of the whole has amounted to 3,000*l.* The organ, which has been erected by Mr. Watson, was presented to the congregation by Mr. Evan Thomas, of Cheetham.

STAINED GLASS.

Ripon Cathedral.—A window, to the memory of the late Hon. and Very Rev. B. D. Erskine, D.D., dean of Ripon, has been inserted in the south aisle of the nave of this cathedral. The window contains two scenes from the life of Christ. The "Nunc Dimittis" occupies the upper part, the centre light representing Simeon with the child Jesus, and on the right and left the Virgin Mary and Joseph. In the lower compartment the Nativity is represented; in the centre light, the Virgin seated with the infant Saviour; and on the right and left are portrayed the wise men and the shepherds. The window, which is of the style of the fifteenth century, was done by Messrs. Clayton & Bell, and is erected at the cost of one of the dean's daughters.

Bath Abbey Church.—There is at length some prospect of the east window of this church being filled in a manner becoming the character of the edifice itself. The matter has been taken up by the Bath Literary Club, and several conferences have been held. It appears to be necessary that the work should be accomplished separately from the general restoration, and the cost of the glass

alone is estimated at 1,000*l.*, apart from the stone work, which the rector has undertaken to provide for.

St. Paul's Church, Cambridge.—A new east window has been placed in this church, as the result of subscriptions among the parishioners. The church being dedicated to St. Paul, the artist has chosen subjects taken from incidents in the life of the patron-saint. The upper-tier openings of the window represent St. Paul's conversion, his first miracle, his conversion of Lydia, the burning of the books at Ephesus; and the lower ones, St. Paul preaching at Athens, his imprisonment, his being brought before Agrippa, and the casting of the viper from his hand after the shipwreck. The centre lights display the Last Supper and the Ascension. The tracery of the window is filled in with the emblems of the four Evangelists, and the "mystic passion" or crucifixion of our Lord. The work has been executed by Mr. W. H. Constable.

Birkdale Church.—A window of stained glass has just been put into the five long lights of the east window in this church. In the centre is a figure of St. James, after whom the church is named. It is nearly of life size, with a shepherd's crook in the right hand. The other four lights are fitted with geometrical patterns. Messrs. Edmundson, of Manchester, were the artists.

Worksop Abbey Church.—A memorial window has been placed in the north aisle of this church, to the memory of Robert John Gainsford, formerly of Darnall Hall, by the members of his family. The artist was Mr. Westlake. The subject is St. John's advice to little children,—"Little children, love one another." The design has been executed by Messrs. Lavers, Barraud, & Co.

Berkeley Church.—It is proposed to place a stained window in this church, in memory of Dr. Edward Jenner, the discoverer of vaccination, who was born at Berkeley, lived and died there, and was buried in the chancel of the parish church. The subject of the window, which will cost 500*l.*, of which 100*l.* have been subscribed, is to be "Christ healing the sick."

St. Barnabas's Church, Hengoed, Wales.—A stained-glass window has recently been placed in the north transept of St. Barnabas's Church, Hengoed, by Captain Husband, of Manchester, in remembrance of the late Rev. C. A. A. Lloyd, M.A., rector of Whittington. The window was executed by Mr. Ashwin, of Great Russell-street, London.

Mark Church, Glastonbury. — This church has just received its last stained-glass window. Most of the churches in that neighbourhood were originally built during the period from the fifth to the twelfth century, out of funds which accumulated from the revenues, &c., of Glastonbury Abbey, and they were of the simplest form and character. They were rebuilt from the thirteenth to the fifteenth century on the same sites. At first the churches were so small that, on rebuilding, the former site was occupied by the chancel alone. Moreover, they were not rebuilt at once, but added on to from time to time, according to the state of the abbey funds, generally finishing with the tower and the north aisle. In Mark Church these successive steps are easily traced. But what distinguishes Mark Church is the accurate geometrical proportions of all its parts.

County Asylum Chapel, Lincoln.—A stained glass window has just been presented to the chapel of the County Asylum, by Mr. G. K. Jarvis, chairman of the visitors, in commemoration of the recovery of H.R.H. the Prince of Wales. It is in the Norman style, by Messrs. Wailes, of Newcastle, and represents in the chief compartment our Saviour stilling the tempest, with a medallion cross overhead, and the figure of an angel beneath, holding a scroll.

Christow Church, near Exeter.—Messrs. Ballantine & Sons, of Edinburgh, have prepared a stained-glass window to be erected in this church, in memory of the late Hon. E. Pelew, formerly vicar of the parish. There are three upright compartments, and these contain illustrations of the 6th, 14th, and 15th verses of Revelation xiv. This portion of Scripture was selected by the late Lady Exmouth, as suggesting the subjects for illustration in the window. The dexter compartment illustrates the 6th verse, showing an angel flying through the heavens, bearing the everlasting gospel to those that dwell on the earth. The central compartment illustrates the 14th verse, and shows, seated on a white cloud, the Son of Man, having on His head a golden crown, and in His hand a sharp sickle. The sinister compartment illustrates the 15th verse: an angel is seen leaving the Temple, as if crying to Him who sits on the cloud,—"Thrust in thy sickle and reap, for the time is come for thee to reap, for the harvest of the earth is ripe." This text is inscribed on the base of the window, and in the top tracery are angels with harps, as if engaged in singing the new song before the throne. The central figure of Christ seated on the white cloud is surrounded and surmounted by an emanation of beatific rays of golden hue, contrasting with His under-garment of silvery white and His robe of ruby. The upper part of the sky is of a light cerulian blue, while towards the earth it assumes a deeper and less ethereal tone.

SCHOOL-BUILDING NEWS.

Blackburn.—St. Peter's Schools, commenced about twelve months ago, have been formally opened by the Bishop of Manchester. The cost is something like 2,800*l.*, and provision is made for 550 children. The architect was Mr. Simpson. The wall, to the height of about 1 yard, displays red bricks pointed; the remainder, to the roof, is painted of a lightish hue; and the ceiling is formed into panels bearing devices, which much enhance the general appearance of the place. Chandeliers are suspended from the centre, to supply artificial light. Mr. Cunliffe, decorative artist, did the panelling and painting. The walls, too, are relieved by mottoes and devices.——The Bishop of Manchester has also taken part in the opening ceremonial of St. Thomas's Schools. In all, extra accommodation has been provided for 2,400 children. St. Thomas's new schools have cost 3,000*l.*, and will accommodate 1,000 children.

Leeds.—The foundation stone of a new school in connexion with the Hunslet Union Workhouse has been laid. The site of the building is contiguous to the workhouse. In the year 1866 the then infirmary was converted into a school-room; but in the latter part of 1870 Mr. Farnall, Poor-law Board inspector, having reported that the building was ill-contrived and unhealthy, it was determined to erect a new school. The plans, which have been approved by the local Government Board, have been prepared by Messrs. Hill & Swann, architects, Leeds. The building will accommodate 100 children, and will be of two stories, with apartments for the school-mistress attached. There will also be provided for the girls a washhouse and laundry, and for the boys a workroom. The contractors for the whole work are Messrs. George Oakes & Son, Hunslet. The total cost is estimated at 2,500*l.*

Chapel Allerton.—The foundation stone of a church school has been laid at Chapel Allerton. The site of the new building is in Back-lane, behind Queen's-place. The school, which will be surmounted by a bell-gable and cross, will consist of two departments, one for girls, which will be 45 ft. by 18 ft.; and the other, for infants, 66 ft. by 18 ft., the two together accommodating about 300 children. Attached to each department will be a playground with out-offices. The plan also includes a mistress's residence. The style of architecture will be modern domestic Gothic. Sir Thomas Beckett has presented the site, which consists of half an acre of ground. The estimated cost of the building is 1,500*l.* Messrs. W. Perkin & Sons, Leeds, are the architects, and the contractors are as follow:—Brick and masons' work, Messrs. John Garland & Son; carpenter and joiners' work, Messrs. Wm. Shires & Son; slaters' work, Messrs. Wm. Pycock & Son; plasterers' work, Mr. John Franks; plumber and glaziers' work, Mr. John Edward Bedford; and painters' work, Messrs. Chas. Wales & Son. The school desks and benches will be supplied by Mr. Ward, of New Wortley.

Wolstanton.—A bazaar, in aid of the completion of the new National School buildings, is to be held. The buildings, in point of style, are a novelty in the neighbourhood. They are from the designs of Mr. Brooks, of London, and are in brick, in the style of the thirteenth century,—domestic Gothic. The plan is three sides of a parallelogram, having the infant-school and class-room on the north, girls' class-room and school on the east, and boys' school and class-rooms on the south and south-west. The windows have flat stone heads, supported by a small column, which divides the lights into two parts. They are all of the same character; but a variety is got by some of the windows having six, some three, but most four lights. The roof is covered with red tiles, the eastern ridge being surmounted by a *flèche*, covered with blue slate, containing a bell, under which is the principal entrance-doorway. A master's house is built at the boundary of the playground. Mr. N. Bennett, of Burslem, is the builder. The total cost, including furnishing, is, we are informed, expected to be about 2,800*l.*, of which about 700*l.* are still deficient.

Kilburne (Leicestershire). — New National Schools have been opened in this populous village. These schools will be an auxiliary to Horsley Schools, and are intended for the education of girls and infants only, the boys continuing to attend Horsley as heretofore. The building was designed by Mr. Knight, of Nottingham, architect, and was built by Messrs. John Beresford and James Knifton, of Kilburne.

Folkestone. — New national schools are in course of erection. The buildings include a master's house, and infants', girls', and boys' rooms, and class-rooms, with accommodation for 290 children, and are being carried out from the designs and under the superintendence of Mr. S. S. Stallwood, of Folkestone.

Miscellanea

The New Invention in the Iron Manufacture.—A number of gentlemen connected with the Iron and Steel Institute and from most of the leading works in the north of England, assembled at the Deeside Works, Middlesbrough, to inspect the new American machine of Mr. Danks, which supersedes puddling by hand. The machine has just been erected, and worked admirably. Mr. Danks was present, and explained the nature of the machine to inquirers. The charge when put into the furnace is carried round in a revolving cylinder, whereby it is worked sufficiently in about three-quarters of an hour, and then withdrawn by mechanical contrivances. Between 600 lb. and 700 lb. was generally the weight of the charge, but it has been in most cases greatly enlarged. The trials were mostly made with molten metal,—pig iron taking a considerably longer time, generally about an hour and a half. The quality of the iron produced, which was from Cleveland pig, was highly spoken of by practical men. Several ironmasters of the United Kingdom combined together and arranged to give Mr. Danks 50,000*l.* for the right to erect and have the full use of 200 of his machines, but some doubt as to the force of the patent is said to have prevented the completion of the arrangement in the meantime.

The Brighton Sewers. — At the usual monthly meeting of the Brighton Intercepting and Outfall Sewers Board, the engineer's report showed that the total length of brickwork which had been put in the 5 ft. diameter sewer was 9,100 lineal feet, or, including the portion between Hove-street and St. Aubyn's-villas, 9,800 ft. In the 7 ft. diameter sewer the total length of heading that had been driven was 10,200 lineal feet, of which 5,800 lineal feet had been lined with brickwork. The ironwork and machinery for the penstocks were on the site of the works at Portobello, as was also the dressed granite for the penstocks and outfall chambers; and the brickwork had just been commenced in the penstock chamber. In the course of a discussion as to the advisability of appointing a committee to inspect the works during their progress, it was remarked that if the Board were to take upon themselves the duty of inspecting the sewer it would take away the responsibility from Mr. Hawkshaw.

Proposed New Workhouse for Rochdale. The local guardians intend to build a large workhouse at Dearnley, and by one concentrated staff reduce their expenditure. The workhouse, when complete, will accommodate 784 inmates, but it is only intended at present to provide for 630. The cost of the erection and furnishing is estimated at 50*l.* per head for each inmate The adopted design has been prepared by Messrs Woodhouse & Potts, architects, Bolton.

The Megaliths at Avebury.—The danger which seemed to threaten the megalithic remains at Avebury has been averted by the intervention of Sir John Lubbock, who has purchased the ground on which building operations were about to be commenced. Grateful thanks are due to Sir John for coming forward to the rescue at the critical moment, when a few years' or even months' delay might have resulted in the complete destruction of the remaining stones.

The Horton Infirmary.—The Horton Infirmary at Banbury was built at a cost of 10,000*l.* by the late Miss Horton, of Middleton Chenery, Northamptonshire, and Highbury, London, and intended by her to be a gift to the town. The building stands in its own grounds in the Oxford-road, and is Domestic Gothic in style. It consists of a centre block, with tower, containing the executive portion or establishment and two wings, in which are the wards for patients. The wards are constructed on the pavilion system. The operating-room is large, and the students' gallery is lighted by four windows and a lantern. There are convalescent wards, dispensing, and consulting rooms. The floors are wainscot and waxed over, and the dressings to doors and windows and the walls of the wards are plastered with Parian cement, thus providing as far as possible against the absorption of foul matter into the plastering of the walls, a fruitful source of ill in many old infirmaries. Mr. Charles H. Driver was the architect.

Society of Arts Endowment Fund.—The Committee of the Society of Arts are seeking to raise an endowment for the Society of Arts of at least 100,000*l.*, to enable it to carry on its work with increased advantage to the community. The Council have a belief that it could render further public service if it had adequate funds placed at its disposal for the attainment of objects for which there are now no public trusts, and are willing to become trustees for the administration of any moneys which private individuals may choose to devote for any special public purpose coming within the scope of the Society's objects. Their desire is to establish permanent departments, with competent officers, who may investigate and report on the progress of new discoveries calculated to promote new industries in connexion with chemistry, electricity, mechanics, agriculture, and raw produce generally, thereby affording increased advantage to the people generally.

Conservative Land Society.—At the seventy-eighth quarterly meeting, held at the offices, in Norfolk-street, on the 9th inst., Viscount Ranelagh in the chair, the receipts for the quarter, ending Lady-day last, were declared to be 26,215*l.* 19s. 6d., and the grand totals to the same date, 1,770,428*l.* 10s. 9d. The total withdrawals amounted to 466,803*l.* 6s. 10d. The number of the last share issued was 37,194. The reserve fund, exclusive of office premises, &c., amounts to 10,500*l.* The rate of interest remains at 5 per cent. on shares, and 4 per cent. on deposits. Among the gentlemen present, besides Viscount Ranelagh, were Col. B. Knox, the Hon. and Rev. W. Talbot, Col. Meyrick, Mr. Goodson, Mr. Holmes, Mr. N. W. J. Strode, Mr. N. Winstanley, Mr. C. L. Gruneisen (secretary), Mr. J. Ashdown, Mr. P. Easall, Mr. W. Poole, Mr. G. F. Talbot, Mr. J. Hugh Thomson, &c.

Destruction of Property at Oldham.—Early on Sunday morning an accident resulting in considerable damage to property, occurred at the Hartford New Ironworks, Oldham, belonging to Messrs. Platt, Brothers, & Co. Connected with these extensive works are storerooms, in which are placed finished machinery. The floors rested upon beams of considerable strength, and were otherwise supported with stout iron pillars. About the time indicated, the whole fell in with a tremendous crash, rendering the carefully-finished and valuable machinery a huge heap of almost worthless *débris*, and causing a damage roughly estimated at from 3,000*l.* to 4,000*l.* Fortunately, no one was near at the time, and no injury to human life resulted. The accident is said to have been brought about by the large quantity of machinery in store.

A Dispute as to Four Inches of Land.—The case of Rayner *v.* Snelson, in the Nisi Prius Court at Chester, before Mr. Baron Channell, was one in which the plaintiff, in accordance with the defendant, took down a wall on which the defendant's roof-tree rested, and rebuilt the wall 4 in. within the extreme limits of plaintiff's own property. Defendant then made use of the new wall as a party-wall, and plaintiff allowed his builder, or his sons, to cut the connexions with defendant's property. This was settled by arbitration in defendant's favour, but the present action against defendant followed, on the ground that defendant had built upon the 4 in. of space adjoining plaintiff's wall. The Judge said the action had been unadvisedly and imprudently brought; and the jury returned a verdict for defendant, a poor widow.

Cheap Churches.—The Bishop of Manchester at the annual meeting of the Diocesan Church Building Society at Preston, expressed a hope that the society would see to it that the new churches which were being built should be "substantial" churches. He had been rather alarmed at the unsubstantial character of some of these new churches. A friend had told him that there was hardly a new church in Manchester that would live for fifty years. The Bishop hoped that was an exaggerated way of putting the case, but there was a foundation of truth in the saying. He observed that roof timbers sometimes were slender, and in some instances churches which had been built only two or three years ago were giving way in the roof. Everybody knew that a cheap article proved often the dearest article in the end. If they would forego in the building of churches the use of frittering ornament, which was often an excuse for veiling an architect's inability to comprehend the laws of architectural proportion, and be content with solid substantial outlines with good proportions, the results would be more satisfactory. Very good advice.

Charge against Mr. E. B. Smith, the Surveyor to Shrewsbury Local Board.—Mr. E. Jones moved, at a recent meeting of the town council as a local Board, that the surveyor be requested to resign. He regretted to do so, because personally he had no objection to Mr. Smith; but he had felt, long before he (Mr. Jones) became a member of that Board, that the business of the town belonging to the surveyor was not well done, or likely to be economically managed. For business, whether private or public, to be successful, those who had to manage it must be thorough masters of it, and at tend to it closely. The duties of the surveyor were, no doubt, multifarious, and required great watchfulness and attention. After entering a good deal into detail, a discussion of five hours ensued, and Mr. E. Jones then replied, and said he would withdraw his motion, not that he was satisfied with the explanations of the surveyor, but because he saw that the feeling of the Board was against him (Mr. E. Jones). The motion was then withdrawn.

Co-operative Congress at Bolton.—The fourth annual congress of the members of the co-operative societies of England has been held in the Co-operative Hall, Bolton. There was a large attendance of delegates. After some preliminary remarks from the Bishop of Manchester, Mr. Hughes, M.P., delivered an address. A discussion took place on the desirability of establishing a co-operative bank. It was resolved "that the Congress fully recognises the imperative necessity of establishing a central office and appointing a permanent secretary, earnestly recommending the central board to take immediate steps to secure the accomplishment of these objects." The following were appointed the London section of the Board:—Messrs. Thomas Hughes, Q.C., M.P., — Morrison, M.P., E. Neale, J. M. Ludlow, D. Pare, Hon. A. Herbert, M.P., Lloyd Jones, H. Pratt, G. I. Holyoake, E. O. Greening, G. Howell, Captain Maxse, R.A., Dr. H. Travis, Mr. Applegarth, and J. B. Huntington.

The Removal of Christ's Hospital.—The governors of Christ's Hospital have resolved to accept the offer made by the Mid-London Railway Co. for the purchase of the buildings and 4 acres of ground on which the institution stands, the company's Bill having passed its second reading in the House of Commons by a majority of 27. The sum of 600,000*l.* was offered for the land, hall, and buildings. A thousand boys will be transferred to new buildings in some healthy country district, and half a million of money will remain for planting day-schools in various parts of London. The company are to pay at once 10 per cent. deposit, and the officers of the hospital are directed to take all necessary steps for completing the transfer of the property.

The New Peabody Buildings in Bermondsey.—The Peabody trustees have decided to erect several blocks of buildings in Bermondsey, similar to those in the Blackfriars-road, and are just about to proceed with the erection of the first block, the site for which is in East-street, near New Church-street; and, in connexion with the intended building, the Bermondsey local authorities are endeavouring to secure the making of a new and improved thoroughfare between East-street and New Church-street.

Relief to Crowded Footways.—It is said of the Chinese and other Eastern nations that they do many things in a way the reverse of that of the Western. The out-and-out Westerns,—the Trans-Atlanticers,—seem disposed to make the extremes of East and West meet, and to do things in a way quite out of the ordinary *run* of us semi-Westerns. It is seriously proposed in New York to relieve the passenger-traffic of Broadway by a "travelling side-walk" on a line with the second stories of the houses, mounted on pillars, and worked through these pillars by shafts of stationary engines, which will cause the travelling side-walk to run along one side of the streets and back along the other, in united sections, like an endless band, with curiously-contrived local cars, to fasten on and shove off with passengers, at corner stair-ways, so that the side-walk never stops, and the cars never move on, along the route. The inventor of this odd scheme is a Mr. Speer, and we hope he may succeed with his "Rapid Transit Sidewalk Company." He has patented his invention in America, and is about to do so in Europe.

The English Church in Rome.—The church proposed to be built in Rome is calculated for 800 persons. A covered corridor connects it with the house, the basement of which will contain a large room for the library now existing, and an ample sacristy where meetings and classes can be held. Mr. Street has chosen the Pointed style proper to Italy, and for his materials those most available in Rome, brick, with the mullions and tracery of stone. The dimensions of the church will be 160 ft. by 56 ft. externally, 37 ft. in height internally, and 79 ft. to the battlement of the campanile, which will carry a peal of bells. For these purposes it is desired to raise 15,000*l.*, including the cost of a site, for which some favourable and healthy spot within the city will be chosen.

The New Market Hall, Knutsford.—The memorial stone of the new Town-hall, now nearly completed, has just been laid. The inhabitants, according to their ancient custom at festive times, made various devices in sand on the ground fronting their houses; from many windows flags were flying; and the church bells were rung. Lord Egerton of Tatton, with a desire to meet the necessities of the town, is building a Gothic Market Hall, with Assembly and Committe Rooms, where, not only can his Lordship's court gather, but the inhabitants of the town generally, not simply for business in the Market House, but for public meetings, concerts, and entertainments, in the Assembly Room over the Market House. Mr. Waterhouse is the architect.

Portraits.—Mr. Samuel A. Walker, of Margaret-street, Cavendish-square, has sent us some admirable photographs of the late and present Viceroy of India, Lord Mayo and Lord Northbrooke, which will doubtless interest a number of persons just now. Lord Mayo's portrait has that aspect of sadness, at a moment when no cause for sorrow seemed to exist, which has been so often remarked in the case of other persons who have afterwards suffered. Mr. Walker has made the clergy a specialty, and prints a remarkable list of portraits for sale. He is also issuing an interesting series of photographs of the interiors of churches.

Startling Phenomenon at Pontypool.—On Saturday before last the inhabitants of Pontypool were alarmed by a peculiar noise, resembling the falling of planks and stones, and, under the impression that some houses had fallen close at hand, there was a general rush to the doors, but as they got there the sounds deepened into the unmistakable roll of a prolonged clap of thunder. The lightning, it turned out, struck the chimney-pots of houses in Moreton-street, and, descending the flues, fortunately passed out of doors without doing any serious damage. The escapes, however, were miraculous.

Reading Architectural Society.—At the general meeting of the Reading Architectural and Archæological Society, held on Wednesday evening, the 3rd inst., at the Athenæum, the Hon. Sec. (Mr. E. J. Shrewsbury) read a paper "On the Ecclesiastical Architecture of England," being a continuation of the subject of a former paper, and comprising a general historical review of the rise and fall of Gothic architecture from the First Pointed period, with a concise sketch of the revival in the present century. A discussion, opened by Mr. Morris, ensued.

Utilisation of Slag.—Further uses for slag are noted in the monthly scientific article of *Chambers's Journal*. An ingenious inventor in Philadelphia has devised a way of blowing a jet of steam through a current of liquid slag; and thereby he produces fine threads of slag from 2 ft. to 3 ft. in length, and more or less elastic. To this material (which gives one a hint as to the nature of the process whereby asbestos is made) he gives the name "mineral cotton;" and as it is found to be an admirable non-conductor for heat, it is to be manufactured in quantities, and tried as padding for pipes and steam-boilers, and in places where escape of heat is to be prevented. A specimen of this thread or fibre has been exhibited at the Manchester Philosophical Society. It has a lustrous white fibre, singularly like cotton-wool from the pod. Its cost is trifling; and it can be used as a coating for refrigerators as well as for steam-boilers. Small quantities of similar wool, it is said, are sometimes produced while the blast is on, in the Bessemer steel-converters. Near Osnabrück, in Hanover, in imitation of shot-making, molten slag is let fall from a height of about 8 ft. into water, where it forms into "large bean-shaped gravel," which is used in great quantities for the metalling of railways. At some of our English works slag is now broken up by Blake's stone-breaker, and sold for road-making; and we are told that the Bessemer slags, from hematite, make excellent concrete, because of the large quantity of lime they contain; for which reason, and for the silica which they also contain, they make excellent manure for potatoes and barley. In the fields, the broken slag crumbles to powder.

Royal Italian Opera.—An admirable performance of "Fra Diavolo," was given at Covent Garden, on Monday night last, Mdlle. Pauline Lucca making her first appearance, and filling the theatre with an air of gladness. Mdlle. Lucca has made the part of *Zerlina* her own; both as regards acting and singing the representation is perfect. Signor Naudin is an exceedingly good *Fra Diavolo*, as all opera-goers know, and the other characters were effectively supported. Mr. Gye is fortunate in his new venture, Mdlle. Albani: her *Amina* ("Sonnambula") gave great pleasure and much promise.

The Royal Academy.—Some erroneous reports as to the opening of the Exhibition having been circulated, it may be useful to say that the ordinary arrangement is not to be departed from. It will be opened to the public as usual on the first Monday in May (the 6th), and the private view will be given on the preceding Friday, May 3rd.

Fall of a Building in Manchester.—In Brook-street, Old Garratt, a large portion of the back part of the shops, Nos. 103, 105, and 107, has fallen into the River Medlock. At the time, the river, which runs under the street at this point, was flooded by excessive rain to a height of something like 16 ft., or 12 ft. above the ordinary level; but it subsided very shortly, leaving the mass of rubbish, which almost blocks the stream, fully exposed to view.

The Institution of Civil Engineers.—There are now on the books of the Institution 14 honorary members, 748 members, 1,109 Associates, and 235 students, together 2,106, as against 1,995 at the same time last year.

Exhibition Palace, Dublin.—The decorator engaged is Mr. Bell, not Mr. Beer, as printed last week.

TENDERS

For the erection of a fever hospital, at Barming, near Maidstone, Kent. Mr. George Livingstone, architect. Quantities supplied:—

Carey & Bulmar	£4,229 12 4½
Grensted	3,500 0 0
Wright & Co.	3,455 0 0
Lacy & Torkington	3,307 0 0
Dover & Co.	3,283 0 0
Anscombe	3,275 0 0
Abnett	3,250 0 0
Wallis	3,240 0 0
Avard	3,197 0 0
Addock & Rees	3,191 0 0
Stephenson	3,124 0 0
Bridge	3,100 0 0
Cox & Brothers	2,970 0 0
Davis	2,547 14 2

For new school-room, &c., at Abbot's School, Guildford. Mr. Edward Ward Lower, architect:—

Swayne & Sons	£349 10 0
Burdett	327 10 0
Mason	325 0 0
Strudwick (accepted)	318 0 0

For new buildings in Lime-street and Cullum-street, City, for the trustees of the late Mr. Samuel Williams. Mr. George Elkington, architect:—

Axford & Whillier	£10,182 0 0
Little	9,779 0 0
Macey	9,768 0 0
Conder	9,679 0 0
Coleman	9,266 0 0
Browne & Robinson	9,147 0 0
Henshaw & Co. (accepted)	8,957 0 0

For a new church at Parwich, Ashbourne, Derbyshire. Messrs. Stevens & Robinson, architects:—

Buxton	£3,414 1 0
Pritchlow & Ward	3,382 0 0
Slater	3,208 0 0

For rebuilding the Cannon Brewery, Watford, Herts, for Mr. Joseph Ruskin. Messrs. J. & A. E. Bull, architects:—

G. & J. Waterman	£2,589 0 0
Chadwick	2,530 0 0
Hailey	2,341 0 0
Allen	2,250 0 0
Holland	2,167 0 0
J. & W. Savage (accepted)	2,094 0 0

For the erection of premises, No. 7, Bucklersbury. Mr. Edmund Woodthorpe, architect. Quantities supplied by Messrs. Welch & Atkinson:—

		Deduct for Plate-glass.
Gammon	£2,098 0 0	£35 0 0
Conder	1,970 0 0	14 0 0
Killby	1,892 0 0	—
Woodward	1,845 0 0	29 0 0
Turner & Sons	1,855 0 0	25 0 0
Perry, Brothers	1,825 0 0	22 0 0
Browne & Robinson	1,795 0 0	—

For warehouse, George-street, Mile-end New-town, for Mr. Lindus. Mr. William Mundy, architect:—

Brown	£1,790 0 0
Enevor	1,660 0 0
Peters	1,640 0 0
Moyle	1,628 0 0
Russell	1,487 0 0
McLean	1,463 0 0
Ennor (accepted)	1,392 0 0

For the enlargement of the Methodist Free Church, at Peckham. Mr. F. Boreham, architect:—

Thompson	£1,247 0 0
Richards	1,131 0 0
Waterer	1,020 15 0
Tarrant	1,000 0 0
King	853 0 0
Howard	813 15 0

For the erection of chimney-shaft, &c. for Messrs. Forbes & Abbot, Old Ford. Mr. Andrew Wilson, architect. Quantities supplied:—

Outhwaite	£736 0 0
Warskitt	698 0 0
Morter	630 0 0
Hearle	595 0 0
Killby	593 0 0
Ennor	591 0 0
Wicks, Bangs, & Co.	570 0 0

For erection of a small factory and residence, at Sudbury, Suffolk:—

Grimwood (accepted)	£964 0 0

For alterations and additions to parsonage-house, Ashford, Middlesex, for the Rev. G. W. Seppings. Mr. John M. Hooker, architect:—

Norris	£1,612 0 0
Longmire	1,539 0 0
Collings	1,491 10 0
Knight & Sons	1,484 0 0
Lodge	1,470 13 0
Wright and Goodchild	1,451 0 0
Nightingale	1,443 0 0
Reavell	1,419 0 0
Gibson, Brothers	1,395 0 0
Brunsden	1,251 0 0

For the erection of two semi-detached houses and stables, in Harold-road, Hastings. Mr. W. L. Vernon, architect:—

Wood & Geary	£1,385 0 0
Parks	1,378 0 0
Reeve	1,365 0 0
Starr	1,353 5 0
Vidler	1,326 10 0
Rodda	1,296 0 0
Hinkley (accepted)	1,255 18 6

For refreshment saloon, at Dalston Junction Station, for the North London Railway Company. Mr. T. Matthews, architect:—

Vaughan	£1,380 0 0
Axford	1,365 0 0
Patman & Fotheringham	1,357 0 0
Abraham	1,300 0 0
Watts	1,289 0 0
Wicks, Bangs, & Co. (accepted)	1,275 0 0
Cardus	1,200 0 0

For Calvinistic Methodist Chapel, at Llandinans, Montgomeryshire. Messrs. Szlumper & Aldwinckle, architects:—

E. H. Williams	£2,600 0 0
Morgan	2,350 0 0
J. Williams	1,850 0 0
Woolley (accepted)	1,720 0 0

For completing two villas at Colley-road, Gipsy-hill, for Mr. R. May:—

Kemp	£1,000 0 0
Phillips	998 0 0
Riley	970 0 0
Spencer	935 0 0
Dedman	923 0 0
Wright	890 0 0
Ellis	860 0 0

For decorative repairs at 15, Mornington-crescent, Hampstead-road. Mr. J. H. Rowley, architect:—

Heeps	£178 0 0
Newman & Mann	148 0 0
Vaughan	124 0 0
Crabb (accepted)	115 0 0

For works to the north wing of Euston Hall, Suffolk (contract No. 1), for the Duke of Grafton. Mr. Norton, architect. Quantities by Mr. Thacker:—

Cubitt & Co.	£2,550 0 0
Smith & Co.	2,521 0 0
Holland & Hannen (accepted)	2,376 0 0

For villa residence at Sydenham, for Mr. Benjamin Standring. Mr. Norton, architect. Quantities by Mr. Thacker:—

Patrick	£3,420 0 0
Holland & Hannen	3,247 0 0
Moore & Grainger	3,240 0 0
Perry	3,138 0 0
Hughesdon (accepted)	2,711 0 0

For alterations to the Baptist Chapel, Upper Holloway. Mr. W. A. Dixon, architect. Quantities supplied:—

Manley & Rogers	£1,847 0 0
Wicks, Bangs, & Co.	1,820 0 0
Carter	1,770 0 0
Mann (accepted)	1,765 0 0

For Rattlesden schools and teacher's residence, Suffolk. Mr. George Barnes, architect:—

Smith	£980 0 0
Cunnold	969 0 0
Girling	899 0 0
Tooley	899 0 0
Gibbons	896 0 0
Smith	886 0 0
Luff	878 0 0
Pearson	777 0 0

For new shop-front, alterations, and repairs, at No. 28, Salisbury-street, Lisson-grove, for Messrs. Hanford, Brothers:—

Ingram (accepted)	£320 0 0

For alterations and fittings to the "Cricketers," Newington-butts. Quantities not supplied:—

Badcock	£459 0 0
Hill	419 0 0
Bridgman, Nuthall, & West	347 0 0

For rebuilding premises in New North-road, Islington. Mr. Nunn, architect. Quantities not supplied:—

Stead	£2,045 0 0
Bridgman, Nuthall, & West	1,797 0 0
Langmead & Way	1,780 0 0
Annley	1,698 0 0
Cole	1,637 0 0
Jacobs	1,575 0 0

Almshouses, Bath-street, St. Luke's.—Mr. Cohen's tender was 5,000*l.*, not 5,900*l.*

Thirty-nine Houses, Edgeware-road.—We are asked to say that "Mr. J. Nicholson was associated with the surveyors already named in preparing the estimate."

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We are compelled to decline pointing out books and giving addresses.

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BUILDERS and CONTRACTORS desirous of TENDERING for the ERECTION of WORKSHOPS, &c. in the King's-road, Chelsea, may see the plans and specification on and after the 15th day of APRIL, at No. 173, King's-road. Tenders to be delivered on SATURDAY, APRIL 20th. The lowest or any other Tender will not of necessity be accepted.
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TO BUILDERS.—Notice is hereby given, that Plans and Specifications for BUILDING NEW SCHOOLS at Chobham, in the County of Surrey, are lodged at the House of Mr. CHARLES HOWARD, Parish Clerk, and will there remain for inspection until APRIL 22nd, 1872. All persons wishing to Contract for the Building must send, on or before APRIL 23rd, sealed Tenders, addressed "School Tender. The Secretary of School Committee, Vicarage, Chobham, near Bagshot." The Committee do not bind themselves to accept the lowest or any Tender.

TO SEWAGE COMPANIES and OTHERS. TAUNTON LOCAL BOARD of HEALTH.—The Local Board of Health for the district of Taunton, in the county of Somerset, are desirous of receiving APPLICATIONS, with terms, for the UTILIZATION and DISPOSAL of the SEWAGE of that town, which contains a population of about 15,000.
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Plans may be seen and full particulars obtained on application to Mr. JAMES HENRY SMITH, the Board's Surveyor, at his Office, East-street, Taunton.—By order, WM. MARWOOD, Clerk.
Taunton, April 4th, 1872.

MIDLAND RAILWAY.—To BUILDERS and OTHERS.—The Directors invite TENDERS for the ERECTION of STATION BUILDINGS, at Camphill Station. Persons desirous of tendering for the same may inspect the drawings and specification, and obtain a copy of the quantities, upon application to Mr. BOWKER, Goods Station, Lawley-street, Birmingham, on and after MONDAY next, the 8th inst. Tenders to be forwarded to the Secretary of the Way and Works Committee, Midland Railway, Derby, not later than FOUR p.m. on MONDAY, the 15th inst. The Directors do not bind themselves to accept the lowest or any Tenders, nor to pay any expenses connected with any of the same.—By order,
JAMES WILLIAMS, Secretary.
Derby, April 2, 1872.

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GEO. EDGAR FRERE, Secretary.
28, Lincoln's-inn-fields, London, 28th March, 1872.

MANOR of ASTON LOCAL BOARD.—To CONTRACTORS.—Persons desirous of TENDERING for the DRAINAGE, KERBING, CHANNELLING, PAVING, and other Works connected with the repair of all or any of the following Roads,—Victoria-road, Park-road, and Church-road,—may inspect the plans and specifications, and obtain form of Tenders at the Offices of the Local Board, Wordsley-place, Witton-road, Six Ways, Aston, on or after THURSDAY, 11th instant, between the hours of TEN and FOUR. Tenders to be sent in, endorsed, "Tenders for the Repair of Roads," on or before SATURDAY, the 4th MAY, 1872. The lowest or any Tender will not necessarily be accepted.
April 9th, 1872. WM. BATTEN, Surveyor to the Board.

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WANTED, by a London Builder, a JUNIOR CLERK, competent to keep time and books, square up dimensions, and copy drawings. State age, salary, and references, and enclose copy of testimonials. Office hours, from Six, a.m. to Six, p.m.—Address, 913, Office of "The Builder."

TO ARCHITECTS' AND SURVEYORS' ASSISTANTS.
WANTED, in the Office of an Architect and Surveyor, a competent ASSISTANT, who has a thorough knowledge of extracting quantities.—Apply by letter, stating age, qualifications, salary required, and references, to Mr. F. WILLIAMSON, 31, Castle-gate, Nottingham.

TO JOINERS.
WANTED, a few good SASH and FRAME MAKERS, accustomed to work in machine shops.—Apply, giving prices, &c. for making, to Mr. GUILFOYLE, Saw-mills, North-wall, Dublin.

WANTED, by a Builder at Lambeth, a THREE-BRANCH HAND, for a constancy if suitable. He must be a good Plumber.—Address, stating age, wages required, and name of last employer, to 898, Office of "The Builder."

TO GAS ENGINEERS.
WANTED, in London, a thoroughly practical GAS ENGINEER; one well acquainted with the chemistry of gas making. To an energetic and gentlemanly man a liberal salary will be given.—Address in the first instance, to ALPHA, care of Agra Bank, Nicholas-lane, London, E.C.

TO THE BRICK AND LIME TRADE.
WANTED, an OUT-DOOR CLERK, of respectability and address,—a thorough man of business, who has been accustomed to the Sale of Bricks in London. None but those of excellent character and well acquainted with the business need apply.—By letter only, to Messrs. J. & W. EASTWOOD, Belvedere-road, Lambeth, S.E.

TO CABINET-MAKERS.
WANTED, ONE or TWO first-class HANDS.—Address, stating wages and style of work used to, to 21, Office of "The Builder."

TO STONE MASONS.
WANTED, several good MASONS.—Apply to T. L. BENNETT, Stone and Marble Works, Downham Market.

WANTED, a good MARBLE CARVER, at J. & H. PATTESON'S 36 and 38, Oxford-street, Manchester.

TO PLUMBERS, GLAZIERS, AND PAINTERS.
WANTED, a good THREE-BRANCH HAND. Constant employment and good wages to a steady energetic Man.—Apply to T. L. BENNETT, Railway-road, Downham Market.

WANTED, a PLUMBER and GLAZIER, by a Country Master, for a long job. State age and wages required, and where last engaged.—Address, 20, Office of "The Builder."

WANTED, by a firm in the Iron Trade, a TRAVELLER to represent them in London, and to ASSIST when required in the DRAWING OFFICE. Must be capable of making working drawings, taking out quantities, &c.—Apply, stating age, where last engaged, salary expected, &c. to A. Z. care of Mr. Williamson, 108, Fleet-street, E.C.

WANTED, in a country shop, a FOREMAN of JOINERS.—State age and wages to BUILDER, Post-office, Sudbury, Suffolk.

TO ENGINEERS.
WANTED, a WORKING FOREMAN, for a small Fitter's Shop. State age, wages wanted, and where last employed, to A. B. Stevens's Library, Tottenham-court-road.

TO FIRE BRICK MAKERS.
WANTED, a FOREMAN, for extensive FIRE BRICK WORKS in the County of Durham. None but experienced parties need apply.—Address, S. T. U. care of Mr. J. Bailey, 7, Horsemarket, Darlington.

TRAVELLER to the BUILDING TRADE. WANTED, a YOUNG MAN, of good address, having some knowledge of the principal building firms, and to assist at the books. Apply, by letter only, to Mr. MAUNDER, Stationer, 112a, City-road

TIMBER TRADE and SAW-MILLS.—WANTED, a Young Man, as CLERK. Must be thoroughly acquainted with the English and foreign trade. Will also be required to attend general sales by auction.—Apply, by letter only, to WHEELER & WESTOBY, Sudbury, Suffolk.

SEWAGE FARM.—The Swindon New Town Local Board require a competent Person to undertake the MANAGEMENT of a FARM of 105 acres, irrigated with sewage. A suitable dwelling-house will be provided for the manager.—Apply, stating wages required, with testimonials and references, to Mr. J. C. TOWNSEND, Clerk to the New Swindon Local Board, Swindon.

PAPERHANGER WANTED: one competent to do best work and willing to do ordinary work at fair prices, to take the paperhanging of a West-end firm.—Apply by letter only, to Mr. SAPWELL, Builder, 9, Shepherd-street, Mayfair, W.

JOBBING PORTER.—WANTED, a Handy Man, accustomed to Upholstery business. For a permanency, if suitable.—Address by letter only, X. T. 37, Wells-street, Oxford-street, W.

A JUNIOR CLERK WANTED in a BUILDER'S OFFICE, aged about 20, to book time and materials, moneying out, &c. Must be well up in figures and have been in a Builder's Office before.—Address, stating age and salary expected, to R. B. 14, Clarence-street, St. Peter's-street, Islington.

A JUNIOR CLERK WANTED in a JOBBING BUILDER'S OFFICE. State age, salary, and where last employed.—Address, A. B. care of Mr. Pike, Stationer, Chapel-street West, Mayfair, W.

A BUILDER in Lancashire is in WANT of a GENERAL FOREMAN or MANAGER. He must have a good practical knowledge of building in all its branches, as well as of measuring and estimating, and must be competent to take entire management of the business in the occasional absence of the principal. State age, salary required, and references.—Address, W. 113, "Guardian" Office, Manchester.

WANTED, by a JUNIOR BUILDER'S CLERK (aged 24), a RE-ENGAGEMENT. Is a neat draughtsman, and is used to assisting at bookkeeping and in the usual routine.—Address, M. Thames Works, Beaufort-street, S.W.

TO DECORATORS, BUILDERS, &c.

WANTED, a SITUATION or JOB, by a first-class GRAINER, WRITER, and DECORATOR. Willing to make himself useful.—Address, A. B. 38, Cotton-street, Poplar, E.

TO BUILDERS, &c.

WANTED, a SITUATION, by an active elderly Man, as CLERK or otherwise, and to make himself generally useful. Good references.—Address, W. S. care of Mr. Spruni, 905, Old Kent-road.

WANTED, a SITUATION, as PAINTER, GLAZIER, and PAPERHANGER. Money not so much an object as work.—Address, X. Y. Z. 10, Waterloo-place, Richmond, Surrey.

TO BUILDERS, SURVEYORS, AND OTHERS.

WANTED, a SITUATION, by a BUILDER'S CLERK, aged 27. Can take out quantities, measure work, estimate, &c. and is well acquainted with accounts.—Address, A. B. 11, Halsey-street, Chelsea.

TO BUILDERS.

WANTED, a RE-ENGAGEMENT, as FOREMAN of WORKS, or would take STONEWORK. Good references. MASON by trade.—Address, 856, Office of "The Builder."

WANTED, a RE-ENGAGEMENT, as FOREMAN of WORKS or WORKING FOREMAN, by a Middle-aged Man. Carpenter and Joiner. Is well versed in all branches of the trade and drawings. Is a good measurer, and can set out works. Town or country.—Address, P. A. B. Mr. Bishopp's, 16, Churton-street, Pimlico, S.W.

TO ARCHITECTS AND BUILDERS.

WANTED, a RE-ENGAGEMENT, as SHOP or GENERAL FOREMAN. Joiner by trade. Has had good practical experience.—Address, C. K. 59, Waterford-road, Fulham, S.W.

WANTED, a RE-ENGAGEMENT as GENERAL FOREMAN. Well up in City work. Five years with present employer. First-class references.—Address, T. W. 50, Brunswick-terrace, Grosvenor-park, Walworth.

TO BUILDERS.

WANTED, a RE-ENGAGEMENT, by a competent SHOP FOREMAN, of twelve years' experience. Is systematical, firm, of unexceptionable character and abilities, and well up in figures and drawing. No objection to the country.—Address, 914, Office of "The Builder."

TO BUILDERS, &c.

WANTED, a RE-ENGAGEMENT, as BUILDER'S CLERK, aged 26. Well used to office routine, measuring up work, taking out quantities, or keeping cost of work. Good draughtsman. Personal references.—Address, H. E. 26, Park-road, St. James's-end, Northampton.

WANTED, a RE-ENGAGEMENT in an Architect's Office, by a young Man who has been eight years in the profession, is accustomed to prepare working and detail drawings with accuracy, and having a knowledge of perspective.—Address, C. I. 5, Stock Orchard-street, Holloway, N.

TO BUILDERS AND CONTRACTORS.

WANTED, a RE-ENGAGEMENT, as GENERAL FOREMAN or FOREMAN of BRICKLAYERS, or would Take Piecework. Well up in setting out work and superintending men. No objection to the country. Seven years' testimonials from last employer.—Address, H. H. Post-office, High-street, Croydon.

TO BUILDERS, &c.

WANTED, a RE-ENGAGEMENT, as GENERAL FOREMAN. Out-doors. Ten years' character from one employer. References undeniable. — Address, J. C. 3, Cousins-terrace, High-street, Kensington.

TO BUILDERS, DECORATORS, AND CONTRACTORS.

WANTED, a RE-ENGAGEMENT, by a competent BUILDER'S CLERK. Well up in the routine of the Office, Bookkeeping, and General Office work. Practically acquainted with every branch of the trade; been used to a jobbing business. Age 27. Good references.—Address, M. 44, Balmes-road, Southgate-road, N.

WANTED, a permanent ENGAGEMENT, by an experienced DRAUGHTSMAN and DESIGNER.—Address, A. B. care of Housekeeper, 9, Adam-street, Adelphi,

TO CIVIL ENGINEERS, &c.

WANTED, a permanent ENGAGEMENT as DRAUGHTSMAN. Has been engaged for the past sixteen years on plans, &c. for large public gas, water, and drainage works, and previously two years with an architect. Good reference, &c.—Address, C. E. 24, Stockbridge-terrace, Pimlico, London, S.W.

WANTED, EMPLOYMENT, by a first-class GRAINER and MARBLER. Piecework.—Address, A. G. 37, Willes-road, Kentish-town, N.W.

TO BUILDERS AND OTHERS.

WANTED, EMPLOYMENT, by a good GRAINER and PAPERHANGER. Piecework or otherwise. Address, H. W. 1, Little George-street, Hampstead-road, N.W.

TO SMALL BUILDERS AND OTHERS.

WANTED, EMPLOYMENT, by a Jobbing Man, in the PAINTING, GLAZING, and PLUMBING line. Address, G. W. K. Millfield House, Edmonton.

TO GLASS MERCHANTS, &c.

WANTED, an ENGAGEMENT in a Glass Warehouse, to do the embossing, glass-writing, and lead-glazing.—Address, care of H. C. 51, City-road, London, E.C.

TO ARCHITECTS AND SURVEYORS.

WANTED, an ENGAGEMENT in London, by a fair DRAUGHTSMAN, who is well up in quantities and all branches of the profession.—Address, No. 36, Office of "The Builder."

TO ARCHITECTS AND SURVEYORS.

WANTED, an ENGAGEMENT, by a GENERAL ASSISTANT. A good draughtsman and land surveyor. Ten years in one situation. Salary moderate.—Address, C. 41, Hill-street, Peckham, S.E.

TO BUILDERS, &c.

WANTED, by a first-rate CLERK, of sixteen years' experience, in West-end and country offices, a RE-ENGAGEMENT. Is a neat draughtsman, and well up in estimating, measuring, and accounts. High testimonials and references. Address, 797, Office of "The Builder."

TO ARCHITECTS.

WANTED, by the Advertiser, a SITUATION as JUNIOR ASSISTANT.—Address, T. C. 2, King-street West, Hammersmith, W.

TO ARCHITECTS AND SURVEYORS.

WANTED, by the Advertiser, aged 19, an ENGAGEMENT in an Office of the above (four years' experience under articles).—Address, WM. WOODING, Estate Agent and Valuer, No. 397, Bethnal-green-road, E.

TO BUILDERS AND CONTRACTORS.

WANTED, by the Advertiser, a RE-ENGAGEMENT as CLERK, or otherwise. Well up in book-keeping, prime cost, and general office routine. Aged 27. Good references.—Address, A. 47, Speke-road, Clapham Junction, S.W.

TO CONTRACTORS AND BUILDERS.

WANTED, by the Advertiser, a RE-ENGAGEMENT as CLERK or CASHIER. Thoroughly conversant with the duties, preparing plans and details, quantities, measuring up works, and levelling. Town or country. Aged 23. Good references.—Address, 928, Office of "The Builder."

TO BUILDERS AND CONTRACTORS.

WANTED, by a practical Man, a SITUATION as GENERAL FOREMAN or FOREMAN of MASONS. Has been with last employer several years, by whom he can be well recommended.—Address, F. N. 43, Luard-street, N.

WANTED, by a practical Man, a SITUATION as OUT-DOOR FOREMAN, or CHARGE of a JOB. Is well up in all branches, setting out, and management of men. CARPENTER. No objection to the country.—Address, No. 12, Office of "The Builder."

WANTED, by a practical and energetic young married Man, a SITUATION as WORKING FOREMAN of CARPENTERS and JOINERS, or CARPENTER and JOINER on an ESTATE, or any Place of Trust. No objection to take a General Foreman's place on a job. Town or country. Can give good references. Address, B. H. H. Mr. Morgan, Bookseller, Anglin-street, Worcester.

WANTED, by a thoroughly practical Man, a RE-ENGAGEMENT as GENERAL FOREMAN of CARPENTERS and JOINERS. Town or country, or to go abroad. Fifteen years' experience. Good reference.—Address, T. S. No. 3, Duke-street, West Smithfield, E.C.

WANTED, by a thoroughly efficient CLERK of WORKS, an ENGAGEMENT as above, or to superintend any description of building operations.—Address, J. C. care of Mrs. Headlam, 24, Norfolk-sq[illegible] Hyde Park, London, W.

WANTED, by a t[illegible]hly practic[illegible] Man, a RE-ENGAGEMENT a[illegible] FOREMA[illegible] Joiner by trade. Well up in setting out work [illegible]tending men. Accustomed to all kinds of machinery i[illegible]uilding trade.—Address, T. E. 30, Sussex-street, Warwick-squa[illegible]ico, S.W.

TO BUILDERS AND CONTRACTORS.

WANTED, by a thoroughly practical and energetic Man, a RE-ENGAGEMENT as GENERAL FOREMAN or CHARGE of JOB. Thoroughly versed in drawings, setting out or measuring up any description of work, and good management of workmen. Carpenter and joiner. Aged 37. Reference from present employer.—Address, S. P. Post Office, Ashford, Middlesex.

TO BUILDERS.

WANTED, by a thoroughly practical middle-aged man of great experience and energy, an ENGAGEMENT as OUT-DOOR FOREMAN. Carpenter and joiner by trade. Well up in setting out, and management of men and materials. Good references.—Address, H. C. 3, Station-road, Clapham Junction, Battersea.

TO DECORATORS, &c.

WANTED, by a steady, middle-aged Man, a SITUATION, or PIECEWORK. Is a first-class Paperhanger, and would be found very useful in a Decorator's Shop, having a thorough knowledge of the business.—Address, No. 900, Office of "The Builder."

WANTED, by a Young Man, aged 25 (Joiner by trade), a SITUATION in a Builder's Office. Thorough knowledge of drawings, specifications, measuring, &c. and a very good draughtsman. Good reference.—Address, H. C. 15, University-street, Tottenham-court-road.

WANTED, by a Young Man, a CONSTANT SITUATION as PAINTER, GRAINER, and PAPERHANGER; used to Plumbing work. Country preferred. Wages moderate, if constant.—Address, J. PAUL, 5, St. Andrew's-road, Romford, Essex.

TO MASTER BUILDERS AND PLUMBERS.

WANTED, by a Young Man, a CONSTANT SITUATION as PLUMBER, or on a Job. Can do plain zinc work. Would make himself useful in other branches if required. Address, G. L. 2, Malvern-road, near the Junction, Kilburn.

WANTED, by a PLUMBER, or THREE-BRANCH HAND, a constant JOB.—Address, G. H. No. 12a, Hunt-street, Latimer-road, Notting-hill, W.

TO NOBLEMEN, BUILDERS, AND OTHERS.

WANTED, by an experienced, practical Man, a SITUATION as BUILDER'S FOREMAN, or CLERK of WORKS, either to go abroad or on an estate. Good testimonials. Address, G. B. 6, Milverton-street, Kennington-road, S.E.

TO PLUMBERS, GASFITTERS, &c.

WANTED, by a respectable Young Man, a SITUATION as IMPROVER or LABOURER, as above. Town or country. State Wages.—Address, S. L. Post-office, Upper Sydenham, Kent.

TO ARCHITECTS AND SURVEYORS.

WANTED, by an ASSISTANT, aged 21, an ENGAGEMENT, in a London Office. Is a neat draughtsman. Salary, 10l. a quarter.—Address, S. G. 118, London Wall, E.C.

TO ARCHITECTS, &c.

WANTED, by an ASSISTANT, a RE-ENGAGEMENT. Can prepare drawings from rough sketches, and is a good draughtsman and colourist. Terms moderate.—Address, A. B. THORNBOROUGH, Lower Addiscombe-road, Croydon, S.

TO ARCHITECTS AND SURVEYORS.

THE Advertiser of three years' experience, is desirous of obtaining a SITUATION in above Office. Neat tracer and draughtsman. Moderate salary. Good references.—Address, H. K. 3, College-avenue, Hackney, N.E.

TO ARCHITECTS.

THE Advertiser, of many years' experience in both countries, wishes for a Permanent ENGAGEMENT in the country. Would like the management of an office, or some position of trust. Gothic work, perspective, and quantities. First-class references. A view to partnership desirable.—Address, 922, Office of "The Builder."

TO BUILDERS AND DECORATORS.

SITUATION WANTED, as GRAINER, PAPERHANGER, &c. Country preferred.—Address, J. B. 12, Salisbury-street, New North-road.

STAIRS and HANDRAILING WANTED by THOS. DYER, 5, Branksome-road, Acre-lane, Brixton, S.

PLUMBER (Good).—WANTED, a SITUATION by the Advertiser as above. Can do gasfitting and zinc-work (plain). Good references.—Address, E. W. Mechanics' Institute, Ealing-green, W.

TO ARCHITECTS.

QUANTITY-TAKER and MEASURER, of twenty years' practical experience, offers TEMPORARY ASSISTANCE, upon terms as may be agreed upon.—Address, SURVEYOR, 25, Thornton-street, Brixton-road, S.W.

TO DRAUGHTSMEN.

OCCASIONAL ASSISTANCE required in an Office.—Address, stating terms, to ARCHITECT, care of Mr. Foss, Stationer, 56, Coleman-street, E.C.

TO BUILDERS AND DECORATORS.

GRAINER and MARBLER.—WANTED, by the Advertiser, a Constant SITUATION, in Town or Country. Willing to fill up time in painting.—Address, J. C. 149, Regent-street, Westminster, S.W.

TO BUILDERS AND PLUMBERS.

EMPLOYMENT WANTED, by a good PLUMBER. Well up in all branches, and can do hot-water and gas fitting and plain zinc-work, &c. Good reference if required.—Address, J. B. Plumber, &c. 4, Dowgate-hill, Cannon-street, City.

CLERK of WORKS.—WANTED, a RE-ENGAGEMENT, by a practical Man. Good testimonials and references.—Address, No. 911, Office of "The Builder."

A QUANTITY SURVEYOR, of great experience in both Engineering and Architectural Work, would be happy to PREPARE DRAWINGS, SPECIFICATIONS, or BILLS of QUANTITIES for the Profession upon moderate terms.—Address, DEXTER, Post-office, 38, Great Russell-street, Bloomsbury, W.C.

TO CIVIL ENGINEERS, ARCHITECTS, OR BUILDERS.

A GENTLEMAN, lately engaged on Railway Works, and knowing perfectly well the Construction of Buildings or Railway Works, wishes to find a SITUATION as DRAUGHTSMAN, or otherwise. Can give the highest references. Salary not so much an object as prospective advancement.—Address, A. FRAIN, No. 60, Manor-street, Clapham.

TO CIVIL ENGINEERS, CONTRACTORS, &c.

A GENTLEMAN (24) who has been engaged for the last nine years in the construction of large sanitary and other works, desires an ENGAGEMENT under an engineer or contractor. Is well acquainted with sewerage, irrigation, water and tidal works, erection of large buildings, and the most modern principles of sanitary engineering. Quick and accurate surveyor and leveller, neat draughtsman, and can prepare quantities, estimates, &c. Excellent references.—Address, 42, Office of "The Builder."

TO ARCHITECTS, BUILDERS, AND OTHERS.

AN experienced SURVEYOR of fifteen years' practice in the metropolis, OFFERS [illegible] SERVICES, on moderate commission and terms, as [illegible] SURVEYOR and MEASURER, or in the Arrangement of [illegible]ccounts and Contracts, &c.—Address, A. B. 37, Claverton-stree[illegible]ico, S.W.

TO ARCHITECTS.

A GOOD JUNIOR ASSISTANT requires an ENGAGEMENT.—Address, A. Z. 38, Frederick-street, Gray's-inn-road.

TO ARCHITECTS.

A GOOD DRAUGHTSMAN, having had four years' experience, seeks an ENGAGEMENT. Country not objected to. Highest references.—F. W. K. 13, Hobury-street, Chelsea, S.W.

TO ARCHITECTS, SURVEYORS, AND ENGINEERS.

A GOOD DRAUGHTSMAN, well versed in building, practically, OFFERS his SERVICES in Town, at a moderate salary.—Address, A. 191, Clarendon-road, Notting-hill, W.

A PERSON of very great experience in the Building, who is just completing a good contract for a contractor, OFFERS his SERVICES to a respectable Firm in the capacity of MANAGER or otherwise at a moderate remuneration.—Address, A. B. 53, Malvern-road, Dalston.

TO GASFITTERS, &c.

A YOUNG MAN, aged 20, wishes for an ENGAGEMENT, where he can improve himself. Wages no object.—Address, F. R. 22, Pond-place, Chelsea.

TO BUILDERS.

A YOUNG MAN, a few months out of his time, wishes a SITUATION as PLUMBER and THREE BRANCH HAND. Good reference if required.—Address, J. B. No. 9 Cavendish-grove, Wandsworth-road, London.

TO CONTRACTORS AND BUILDERS.

A THOROUGHLY practical CARPENTER and JOINER (age 40) desires an ENGAGEMENT. Is a quick and correct bookkeeper, estimator, and draughtsman, and has had great experience in the management of men. Good references and testimonials.—Address, A. B. 10, Trinity-square, Borough, S.E.

A THOROUGHLY practical PLASTERER, of pushing habits, seeks EMPLOYMENT, or would Take Plasterer's Work to any amount. Has finished some first-class jobs by contract for London firms, who will give a reference as to character and ability. Aged 31. Will go in the country or abroad.—Address, 6, Office of "The Builder."

TO HOUSE DECORATORS AND BUILDERS.

A HIGHLY respectable and thoroughly practical Man, of great experience, is in want of a RE-ENGAGEMENT, as FOREMAN of PAINTERS. Can both estimate and measure. Excellent references and testimonials from former employers.—Address, EDWARD, Post-office, Blackheath-hill, S.W.

The Builder.

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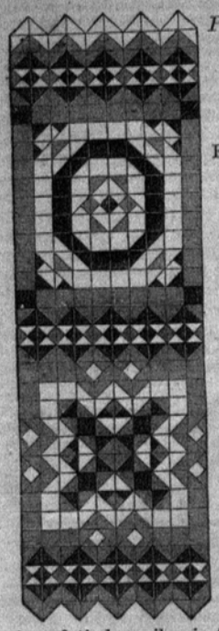

Pressure on Foundations, and Strength of Materials.

F late years, the methods of forming foundations mentioned in our last,* have been generally superseded by that of sinking into the bed of the river long upright cylinders, formed of rings of iron plates bolted together, by which means much greater depths of foundation can be attained at (in most cases) a mere fraction of the cost required for the expensive system of coffer-dams. These cylinders are usually sunk in the following manner. A frame or staging of timber piles is first erected around the site of the cylinder, and a sufficient length of cylinder is then lowered from a platform on the top of the stage, to rest on the bed of the [illegible] The cylinder is kept in its precise position as well as kept truly upright, by cross-[illegible]rs laid horizontally from pile to pile of [illegible]taging, at two or three different levels above [illegible] water-surface, which prevent all lateral [illegible]t in the cylinder, though they do not [illegible]t. The soil is then ex[illegible]ior of the cylinder, eith[illegible] diving-dresses or by mach[illegible]vided for the purpose; and th[illegible] is weighted heavily by "pigs" [illegible]r convenient loading being placed t[illegible] around its inner circumference. [illegible]ult of this operation is, that as the soil [illegible]wed f[illegible] the inside of the cylinde[illegible]rces or cuts its way downw[illegible] influence of the heavy loading [illegible] and [illegible]e cylinder gradually descends through the [illegible]il till the required depth is reached. As [illegible]is takes place, fresh rings of iron plates are [illegible]ded on the top, so that the upper portion of the cylinder is always kept above water, and is retained by the timber guides above mentioned in a vertical position. The outside surface of the cylinder, which is in contact with the guides and with the soil below, is formed to present always a smooth surface; and all the flanges or projections by which the several rings are bolted together are kept on the inside of the cylinder, and serve also the double purpose of carrying the pig-iron loading for assisting the sinking of the cylinder.

By this method cylinders have been carried down to 100 ft. below water-level, and to even greater depths occasionally; and the cases are comparatively rare where a solid bottom cannot thus be reached.

It is then usual to fill the cylinders with concrete, made of hydraulic lime or cement, and thus to render them suitable for supporting the superstructure of the bridge. In some cases the upper rings of the cylinders above the level of lowest water are removed, and the portion of the pier above that level is built up in masonry, so as to present the appearance above water of an ordinary brick or stone pier.

The pressure on the foundations in this case is evidently caused not only by the weight of the superstructure, but by that of the cylinder itself, and of the concrete which fills it. When the depth of the cylinder is considerable, the weight of the concrete makes so large an addition to the pressure on the foundations, that it is frequently very difficult to so apportion the size of the cylinder that the area of ground on which it rests shall have sufficient bearing-power for sustaining the load which it has to carry. In such a case every contrivance is used to lighten this pressure, both by diminishing the size of the cylinder above the river-bed, and by making the superstructure as light as is consistent with stability. The friction of the soil on the sides of the cylinder (especially in the case of clay, which has a tendency to swell when cut into), is also useful in aiding to prevent the cylinder from sinking further when the weight of the superstructure comes upon it.

It is also generally found that ordinary soils will bear more weight at great depths than nearer to the surface. This is mainly owing to their becoming more condensed from the superincumbent weight; and also (especially in clay soils), to the increased difficulty of displacing laterally the soil under pressure. This may be understood by considering the action of an ordinary pointed pile, which, as it is driven into the ground, displaces the original material which is forced outwards or sideways, and renders the soil more condensed in its immediate vicinity. A somewhat similar effect takes place in clay under the pressure of superincumbent weight, which causes the soil to yield or ooze away sideways in consequence; and this movement is found to take place with less facility at great depths. An example of this is found in the railway bridge over the Thames at Charing-cross, the pier cylinders of which are stated to exert a pressure of 8 tons to the square foot on their foundations on the London clay; a pressure to which the same soil could not be exposed at a less depth from the surface without causing some risk of undue subsidence.

When sand of good quality, however, is protected from being washed away by running water or heavy rains, it forms an excellent foundation. It is firm and compact in its nature, and when in beds of sufficient thickness, it may be loaded in practice, with pressures of 6 to 8 tons per square foot with perfect safety.

Before proceeding further, however, some practical considerations must be alluded to which modify the question of the amount of pressure which may safely be put upon a given soil.

Suppose, for instance, a solid block of masonry, 20 ft. square and 20 ft. high, and a thin wall of the same material, also 20 ft. high, were placed upon the same soil. On this supposition, the conditions both of soil and of pressure upon each square foot of the foundations would be alike in each case; and yet the thin wall, as regards the stability of its foundation, would be far less advantageously situated than the square block. A much slighter inequality in the bearing-power of the soil would disturb its equilibrium, or throw it out of the perpendicular; and it would also be more liable to damage from external causes affecting the ground on which it stood. Again, if the construction were a tall shaft or column instead of a wall, and therefore capable of being easily deflected sideways in any direction, these liabilities to injury would be still further increased. To place the two structures, therefore, on an equal standing, it is necessary to reduce considerably the pressure on the foundations of the weaker one; and this is generally done in practice. It is customary to extend the foundation courses of a wall or column to a considerable width beyond the face of the superstructure; and various contrivances are used for effecting this purpose. The most usual of these is to extend the width of the foundation by means of footing courses, which, if properly constructed, have the effect not only of diminishing the pressure on the soil, but of otherwise increasing the stability of the structure, by augmenting the leverage with which the foundation resists the force of the wind or other external causes acting on the building above and tending to overturn it.

Where it is desirable from the weakness of the soil or otherwise, to extend the foundation still more than can be conveniently effected by footings, it is usual to place a layer of concrete of still greater width beneath the footings, or to prepare a foundation of timber piling or cross planking upon which the superstructure can be erected.

In this way it generally occurs in practice, that the foundations of thin walls on the weaker soils are compressed to about half the above-mentioned amounts only. But in the piers and abutments of bridges, and in other structures covering a large space in proportion to their height, the pressures indicated above may be generally adopted with security.

The rocky soils, which vary from the hardness of granite, to that of soft crumbling stone easily worn by exposure to the weather or to running water, may be considered in the same category of bearing-power as masonry itself, which will be subsequently treated of. In fact, it scarcely ever occurs in practice that such soils are loaded with the full amount of weight which they are capable of sustaining; the extent of base necessary for the stability of the structure being, in almost all cases, sufficient to ensure a sufficient area of foundation on rock and the harder soils.

The weight of the structure having been calculated, the pressure per square foot on the soil determined, and the area of the foundations deduced therefrom as above described; the base of the structure must be extended, either by footings, concrete, or otherwise, so as to cover that area and transmit the pressure equally and uniformly over it.

Great care is of course required when sudden changes or variations in the soil take place, to ensure that the settlement of the structure, if any occur, shall be uniform over its whole extent.

It now remains to consider the pressures which may be safely adopted on the materials themselves used in foundations, as distinguished from the soil on which they rest.

Good ordinary brickwork will crush with a load of about thirty tons, and may be loaded safely in practice up to ten tons per square foot. Brickwork of the best description, set in Portland cement, can be loaded in practice with double this quantity, although this should be considered an extreme amount; and it is more advisable to keep well within it, especially in thin walls and columns, which are liable to deflection under such heavy pressures; the latter cause of failure being quite independent of the inherent resistance of the material to crushing weights.

The limit of load which should be put upon stonework depends upon the nature and quality of the workmanship as well as upon the hardness of the stone itself. Thus, rubble walls with thick and irregular joints of mortar are weaker than even inferior brickwork for the support of heavy superincumbent weights, while well-bedded ashlar masonry will bear loading to an immense extent. In general, from eight to thirty tons per square foot may be taken as the practical limits of such loading; but so much depends in each case on the quality of the materials and workmanship, that it is impossible to specify more precisely what limit should be adopted in each case, which must be left in a great degree to the judgment of the constructor.

The bearing-powers of concrete may be taken at from six to twenty tons per square foot

* See p. 277, *ante*.

according to the goodness of the materials of which it is composed, and the proportions of lime or cement used in mixing it.

The bearing-power of timber piles is an important feature in foundations, and varies according to the nature of the soil and the size and length of pile driven. The more ordinary application of piles is to drive them through a loose or weak material to a firm stratum underlying it; in which case they may be considered as columns or pillars supporting the superstructure, and stayed or steadied along their length by the contact of the soil through which they are driven. In this case, and under ordinary circumstances, long piles of whole timber driven to the usual extent (as, for instance, that a ten hammer with a 15-ft. fall should not drive the pile more than a quarter of an inch), may be trusted to carry a load of from ten to fifteen tons. Where the soil is very loose or fluid, however, this load should be diminished; as such a soil affords insufficient lateral support to the length of the pile, and allows it to deflect sideways, which materially diminishes its strength. In this case, a greater number of piles is generally used, which has the double advantage of both condensing the soil and of diminishing the loading upon each pile.

Piling is also frequently used in semifluid soils of great depth, where no firm bottom stratum is attainable. In Holland this takes place to a great extent, the large houses in that country being universally built upon a foundation of this description. In the swampy lands of America also, the same foundation is in very general use for engineering works. The bearing-power of the piles in this case consists mainly of the friction or adhesion of the soil to their surface, and this amount varies greatly, according to the nature of the soil. In fine sand, which is a very adhesive material, it has been found by experiment to be fully one ton per superficial foot of the pile surface (the piles being long and fully driven); but this amount of resistance is seldom attained. The load which piles in this condition will sustain may be ascertained with facility by using one of the undriven piles as a horizontal lever to withdraw a pile already driven; the lever having, of course, its short arm attached by a chain to the pile which is to be drawn, and its long arm loaded; the measure of the weight required to draw it will be of course the friction of the ground upon the surface of the pile. The pile should not be loaded in practice, however, with more than one-sixth of the weight sufficient to draw it, when the soil is throughout of a weak and fluid character.

When foundations of planking are adopted (which, though liable to rapid decay in a dry situation or in one where the timber is wet and dry alternately, may be used with a tolerable amount of safety in wet soils), the planks are usually cut in short lengths and laid crossways to the wall; and tied longitudinally together by longitudinal planking under the superstructure, of the full width of the footing course. The longitudinal and cross planks are spiked together and are found to make an excellent foundation. Good timber may be loaded in this position up to eight or ten tons per square foot, and affords an excellent means for distributing the superincumbent pressure over a large surface, which is especially valuable in the case of the weaker soils.

The above remarks show the general principles upon which foundations can be laid with security in the cases most ordinarily occurring in practice. They are, however, necessarily subject to modification in the endless variety of circumstances met with by the practical architect and engineer in the exercise of their profession.

AS TO THE USE AND ABUSE OF ARCHITECTURAL ORNAMENT.

What is "ornament," as used in reference to architectural design? Perhaps it may be defined broadly as including all features, and all treatment or arrangement of material, the introduction of which does not add to the real stability of the structure. But in ornament, as thus defined, there is an important subdivision; and we may recognise two main branches of architectural ornament, viz., that which has for its main object to emphasize and illustrate the functions of various parts of the construction, and which we may call constructive ornament; and, secondly, that which adds nothing to the constructive expression of the building, but is introduced merely to relieve the design, and give it more interest for the eye, and which might be called (to borrow a phrase from the plasterers), "enrichment," or surface adornment. The value of these two classes of architectural ornament is very different, as also are the degree and manner in which they may respectively be employed with advantage; and perhaps a suggestion or two on these points may not be superfluous.

Constructive ornament, when truthful and expressive (and when it is not this it will fail to be recognised at all as ornament), can hardly be too generally admitted in a design; indeed, any important feature destitute of such treatment would give us a sense of bareness and incompleteness, a feeling that the architect had altogether fallen short in his duties. As a typical specimen of what is included under this head, perhaps nothing better could be mentioned than the two or three forms of the Greek column, with its striated or "fluted" shaft, its cap and base. The column being a feature for resisting vertical pressure, the strong vertical lines of the fluting, which add nothing to its strength, nevertheless, emphasize this object, giving sinew, so to speak, to what would otherwise be a nerveless rounded mass, and directing the eye to the vertical line of force in which the column acts. No large column can lose this feature in its design without losing some of its characteristic expression; and the frequent omission of it by the Romans is one of the many instances of their want of perception of the meaning and value of ornament of this description. Such vertical markings on a long Gothic shaft, on the other hand, would be a superfluity, the vertical tendency being sufficiently indicated by the proportions of the shaft, which does not require to have this tendency and expression further exaggerated. The abacus in its simple form is a purely constructive feature, but its ability to take the weight of the architrave and transmit it to the column is emphasized by the ovolo moulding of the Doric capital, which gathers the pressure of the abacus and concentrates it on the column. The lighter Corinthian capital is a less sincere feature in this respect, and, indeed, so far as the foliage which makes its chief glory is concerned, oversteps the line of constructive ornament and becomes enrichment, being, in fact, a forecast of the principle which ruled the Gothic architect; that of using constructive ornament not to emphasize resistance to weight, but to conceal the fact of there being any weight to be resisted. The Greek architect could not achieve this, for he had still the palpable dead weight of his architrave over the column; and in consequence the stability and unity of expression which characterised the Doric style were here weakened, and the Corinthian architect had to pay for the elegance of his foliated capital by the loss of the monumental grandeur belonging to the older and sterner style; no actual magnitude of scale sufficing to restore the grandeur of expression which this one feature had impaired.

An excellent instance of constructive ornament, again, is the use of ruticestion in masonry, where the junctions of the horizontal layers of masonry which form the wall are marked and emphasized to us to increase the appearance of stability and "bond" between the various parts which make up the mass. This very artifice, when applied to a column, becomes, on the contrary, in most cases a fault and a contradiction, giving a built up and disconnected appearance to a feature which is always best as a monolith, or in as few pieces as possible, and destroying the vertical expression of the column by a series of strongly marked horizontal divisions. The archivolt of the Classic arch, the moulding of the Gothic arch, are equally examples of the true and correct employment of constructive ornament in emphasizing and giving strength to an important feature in the architectural design; and in some cases, as in the set-offs and drip of the Gothic buttress, we find the construction and design so identified that it is almost impossible to discriminate them, and the best form for expressing the functions of the feature becomes also the strongest and most sensible and durable method of constructing it.

It is most with regard to enrichment, however, that caution and judgment on the part of the designer are so necessary. Constructive ornament, being merely the treatment of features which are necessary portions of the building, so as to emphasize their constructive value, imposes its own limits on the architect, and cannot be extended too far without destroying its own object. But in regard to mere enrichment there is no such natural check on the designer, and the views, practical and theoretical, as to the extent and manner in which this class of ornamentation may be used, are various indeed: "Where you can rest, there decorate," said a well-known critic on art and on some other things. A distinguished architect, the late Sir Charles Barry, on the other hand, left on record, in his handwriting on the wall as well as on paper, his opinion that a building could never be too much decorated, provided that all parts of it were treated with equal or proportionate richness. We are inclined to think this a dangerous maxim, and that the truth lies more near the former canon, when adequately interpreted. Surface enrichment of an elaborate description should not, as it seems to us, be applied to features which, like columns, are manifestly doing the heavy work of the construction; indeed, such features admit advantageously of no ornament except that before described, that which emphasizes and helps their constructive expression. Anything which is quite independent of this, tends to weaken the expression and character of the design, by obscuring the real function of the column,—that of supporting weight. In this view the Egyptian column, with its elaborate and varied painted ornament; the Hindoo, with its ragged outline and incrustration of irregular carving; many types of Renaissance columns, rusticated and wreathed, are alike mistakes in treatment. An exception to this rule may be, when the structure in which columns are employed is on a very small scale where lightness and piquant effect are mainly sought, and where the supports really have not much work to do: in such a case the expression sought may sometimes be very much assisted by enriching those portions which in a larger structure should be left plain. In decoration on a wall surface, the portions of the wall which form piers would naturally claim a plain and solid treatment, and surface decoration would be applied to spandrels and intermediate spaces where the principal mass of the structure did not press. It may be said, on Sir C. Barry's principle, that where the pier portions are decorated in a simpler manner, and the richer decoration reserved for the other portions of the surfa[illegible] there is then no objection to a univer[illegible] plication of enrichment to all parts o[illegible] face. There may be cases in which su[illegible] ment might be suitable, and, when car[illegible] with great ease and judgment, successfu[illegible] as a rule, we believe architecture requir[illegible] fectly unadorned wall space, more or le[illegible] the necessary dign[illegible] of [illegible] building, and the f[illegible] are decorated. W[illegible] building entirely en[illegible] look otherwise than so[illegible] treatment is likely to [illegible] confusing the eye of th[illegible] him nothing sufficiently [illegible] rest upon; besides obscur[illegible] architectural motive of the [illegible] of [illegible] themselves, ho[illegible] in many respects, [illegible] an instance of over-d[illegible] fritter on the eye; and we [illegible] that the river front, impressi[illegible] have been far more so had a [illegible] broad untouched wall space be[illegible] siveness to the whole, and gr[illegible] trast to the decoration of the rest. Internally too, where richness is more allowable and to be expected, this has been overdone. There is this to be said, too, about very extensive surface decoration, that in such a case both design and execution are likely, in a majority of instances, to suffer. In few cases can the architect have time to give for really considering and designing ornament enough to cover a building; in few cases either can money or time enough be spared to have it executed in a first-rate manner. A little original, effective, well-considered ornament, though the rest of the building be left plain, is surely better than a quantity of mere repetition of ornament for the sake of a certain richness of effect, which, after all, is by no means one of the highest aims or results in architectural design; and which, in fact, has a tendency to give to a building a semi-barbaric character, like that of the elaborately decorated Japanese cabinets we were referring to a few days ago.

A glance at the styles of architecture now recognised as the greatest seems to bear us out in this view. The Greek architecture certainly was not overdone with the enrichment; but what there was was of the highest and most intellectual interest possible; being, in fact, nothing less than sculpture of the very noblest school. This, perhaps, hardly comes under the term "ornament," or "enrichment," except in

so far as it answers to our previous definition of this, as decoration applied, independently of construction, to relieve and add interest to the building. But in the Mediæval style we see the full force of the distinction drawn here. The early modern users of this style among us worshipped the panelling and fretwork of the fifteenth-century builders; but as our knowledge and appreciation of the works of the great age of building proceeded, we went back, chronologically, step by step, in our admiration, which is now, for the most part, centred, and rightly so, upon the earlier works of the earliest branch of the Pointed style. And we find here ornament, for the most part, very sparingly applied, but generally very effective in treatment and design, and only placed just where the eye seems to require a point of interest to attract it; a band of carved ornament meeting the eye at the point which separates one style of the design from another, and coming out with a sparkle by contrast with the plain masses of masonry adjoining it. A single line of panelling or diaper over a broad expanse of unbroken wall will often have a most piquant effect, doubling the value of the wall as giving mass to the composition, doubling also its own value by the contrast. When we speak of enrichment, however, as ornament "independent of the construction," we mean this only in a qualified sense. The ornament must be so placed as to fall in with the main lines and sections of the construction, not to cross and contradict them; nor must it contradict, or appear as an excrescence on, the nature of construction employed. In masonry, for instance, a row of small panels, as remarked, along a single course of the masonry, is a legitimate treatment: it is, in fact, treating one course ornamentally (a suggestion which might be extensively adopted and improved upon); but to panel a stone wall over in panels independent of the courses is to ornament it in a manner which contradicts construction; which represents, in fact, the outer aspect of a form of construction only suited to another material. The use of carving, too, in its more elaborate [illegible] needs to be very much checked; the river. [illegible]w, in many of our new buildings, seems tion, to carve as much stone-vegetation over timbers can possibly be had for the money, and the s[illegible] blocks of offices have nearly as much the [illegible]g distributed over them as would have [illegible] a whole cathedral in the "Transitional" [illegible]iod. This is not only vulgarising what, [illegible]ghtly employed, is a very beautiful source of decoration, but in towns it is often practically the very worst kind of decoration to employ, as likely to be so quickly worn away and choked up, as to its edges and hollows, by the combined influence of soot and dust.

In fine, we would see architectural ornament suited to the material it is worked in, expressive of or harmonising with the construction, and only introduced where it will really be effective and add value and point to the design. To employ a little ornament according to these requisitions will be found, we think, to demand more time and thought on the part of the designer than at present is often bestowed on the incrustation of a whole façade, turned over to the devices of that amphibious person, the art-workman, who is too often allowed to do, after his own fashion, what should be the result of the care and thought of the architect himself.

AMALGAMATION OR STATE RAILWAYS.

RAILWAY amalgamations are not a novelty, although the subject is at present exciting an unusual degree of interest. For more than a score of years past the process of amalgamation by actual purchase or lease has been steadily progressing, and the great systems, as they are called, are composed of dozens of small, originally independent companies. The larger and more powerful company, like the Octopus, concerning the nature of which naturalists have of late been so much exercised, stretches out its tentacle, and for the smaller and weaker company there is no escape. Each fresh acqnisition adds to the power of the railway Octopus, and increases the number of its tentaculæ; and we find accordingly that some single companies of the present day, if resolved into their primitive elements, would furnish a goodly roll of some dozens of titles of companies that came into existence with their own distinctive local designations, that are now merged in titles indicating extensive territories; as the London and North Western, at first Liverpool and Manchester, London and Birmingham, joined by the Grand Junction; the Midland, the Great Northern, the Great Western, the South Western, the South Eastern, the North Eastern, &c., all of which had originally in their germs their restricted local titles. Many past railway amalgamations have been effected, "not with observation," but not the less really. The amalgamations now on foot, which have led to the appointment of a joint committee of members of the Houses of Lords and Commons, to inquire into the whole question of the policy of amalgamation, and, incidentally, into the desirability or otherwise of the acquisition of railways by the State, are of another character.

A few months since the railway amalgamations on a large scale, proposed by companies, were four in number. 1. The amalgamation of the Caledonian and the North British Companies, which for the last fifteen years have carried on a ruinous competition and internecine strife with each other. Of late friends of peace in the companies have urged the attempt to arrive at the terms that might be accepted by both as the basis of "a Parliamentary peace," either by an equitable division of competing traffic or by amalgamation. Certain terms were laid down and proposed; but, unhappily, acquiescence of the shareholders of both companies could not be obtained, negotiations were broken off, and the draft Bill consigned to the waste-paper basket. 2. The proposed amalgamation of the London and North-Western and the Lancashire and Yorkshire Companies that would together constitute a corporation of great wealth and power, the united capital amounting to 105,000,000*l*. For this amalgamation there is a Bill before Parliament in the present session. 3. The proposed amalgamation of the Midland and the Glasgow and South-Western Companies, which would give a third continuous route between London and Scotland. For this amalgamation also there is a Bill before Parliament. 4. A Bill now before Parliament to authorise traffic arrangements between the Great Western, the London and South-Western, the Bristol and Exeter, and the South Devon Companies. Mr. Grierson, the general manager of the Great Western Company, in explaining the provisions of the Bill, stated that it was not in any sense an Amalgamation Bill. It will, if sanctioned, be for all practical purposes, as regards rates and charges, and as its provisions will affect the public, an Act amalgamating the companies having railways to the west of a line drawn from Worcester to Oxford, and from Oxford to Portsmouth. The four companies engage to procure the consent to the agreement of the smaller companies in Somerset, Devon, and Cornwall, and the arrangement is to be in perpetuity, subject only to such changes as the contracting parties may agree upon.

It seems surprising that there should be so much divergence of opinion among eminent railway officers, and among men of large experience [illegible] the policy of amalgamation, and the principles of railway management, as has been displayed in the evidence given before the joint committee presided over by Mr. Chichester Fortescue, president of the Board of Trade. Mr. Cawkwell, manager of the London and North-Western, was called in support of the Amalgamation Bill in which his company is concerned. He admitted that the public should have security in the event of amalgamation, and stated that they would have it in the competition that would still exist. As regarded running powers, it was impossible to give other companies running powers over their line between Liverpool and Manchester, as both the line and the stations were inadequate to accommodate their own traffic, although their stations in Liverpool had cost 4½ millions sterling.

Mr. Allport, general manager of the Midland Company, on the other hand, in supporting the Amalgamation Bill in which his company is interested, said that the Midland must oppose the proposed amalgamation of the London and North-Western and Lancashire and Yorkshire, unless the Midland had running powers conceded to them over the amalgamated lines. Mr. Allport expressed himself as favourable, in general terms, to amalgamation, but with the essential condition of running powers to other companies over amalgamated lines. Such running powers Mr. Cawkwell showed to be impracticable, and the railways in and near London furnish many similar illustrations. Running powers to "foreign" companies over such lines as the Charing Cross, the Metropolitan, the North London, and the metropolitan extensions of other companies could never be more than a name.

A large number of wit[illegible] ready to be, examined in [illegible] posed amalgamations. T[illegible] in some instances, more n[illegible] witnesses that have come [illegible] to bless: instead of opposi[illegible] of the proposal. From th[illegible] that have been expressed [illegible] chambers of commerce, m[illegible] others, who have been exa[illegible] that these gentlemen have [illegible] themselves either as to the [illegible] amalgamation, the desirability [illegible] chasing the railways, or as to th[illegible] railway management. It is cer[illegible] have not come before the commit[illegible] complete predetermined theory. [illegible] points there is agreement: that goo[illegible] well as passenger fares between stati[illegible] be published by the companies, a[illegible] amount of fares should be [illegible] passengers' tickets. On the subje[illegible] mileage rates there is no agreement. [illegible]ness urges that there should be equa[illegible] for equal service over the whole of a n[illegible] system. Another witness declares that a [illegible] system of equal mileage rates would be unw[illegible] and impolitic; another pronounces such a system impracticable, inasmuch as there are many instances of more than one railway route between the same points, the one route longer than the other. An equal mileage rate would throw one of the lines out of use for traffic between the two places, unless the rates were reduced over the whole system of the Company owning the longer line. Again, liberal rates were frequently necessary to develop the resources, and to nurse into a state of prosperity, a new mineral or manufacturing district. This had been the case with the Cleveland Iron District. The Government authorities that ought to be appointed over railways, and their functions and powers, are other points on which the opinions of witnesses were widely divergent. One asks for a Board of Control and a Board of Arbitration; another for a Board of Appeal, but without power to determine a matter. One witness was of opinion that it would be of the utmost advantage to the public that the State should purchase the railways. Another witness deprecated the idea of Government taking over the railways, which could not be better managed than they are managed now.

Whatever may be the finding of the joint committee, it seems certain that a great change in railway affairs is impending, and that the tendency is towards concentration either by traffic arrangements, by amalgamation, or by the purchase of the railways by the State.

The time is opportune for recalling some past Acts of the legislature in relation to railways.

In 1844 an Act of Parliament was passed for the purpose of enabling Government to purchase, on certain specified terms, all railways in the United Kingdom from that time forward to be constructed. Under that Act, Government took power to purchase the railways that came under its operation at the end of twenty-one years, which expired in 1865, when five-sixths of the railways of the United Kingdom became subject to its provisions. Government had then the option of purchasing the railways, and a Royal Commission was appointed in the following year, 1866, to determine whether and, if any, what action was to be taken under the Act of 1844. The Commission was also to inquire, *inter alia*, into the economical question connected with our railway system; that is, the cost of conveyance on railways, and into the charges which are made by railway companies to the public. The Commission, consisting of divers "right entirely beloved," "right well beloved," and "trusty and well beloved," cousins and councillors, took a large amount of interesting and valuable evidence, but deterred, possibly, by the magnitude and gravity of the responsibility, did *not* recommend any very sweeping change in the railway system of the country. On the contrary, the Commissioners reported "that it is not expedient at present to subvert the policy which has hitherto been adopted of leaving the construction and management of railways to the enterprise of the people, under such conditions as Parliament may think fit to impose for the general welfare of the public." The Commission made numerous recommendations as to improvement in Private Bill legislation, conveyance of mails, interchange of traffic, conveyance of merchandise and minerals, &c. The Commissioners deprecated interference on the part of the Government with the freedom of those who have provided the capital to fix the rates and

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stock into a new species of Government
; nor is there anything to prevent Govern-
t from leasing the working and management
the lines to competent men.

The proprietors of the telegraphs received a bonus of a few millions more than the value of their property; the proprietors of railways are well entitled to as liberal treatment. If the railways can be acquired by Government upon equitable terms, and the difficulties can be avoided of throwing immense power and patronage into the hands of Government, in connexion with the acquisition; if the management of railways can be retained, for the greater part, in present hands; it may scarcely be doubted that a homogeneous railway system might be worked in a manner to confer immense advantages on the community. Under such a system equal mileage rates would present no difficulties. The plethora of the rich and populous districts would be available for the nourishment of those that are poorer and more sparsely peopled. Experiments could be made unhesitatingly in the direction of reduction of fares and charges, and the important problem could be solved with absolute certainty as to the minimum rates and charges that would yield maximum profits.

The time may not be yet come, but it will come, when the prediction of a writer in the *Quarterly Review* nearly thirty years since will be realised:—"It is impossible not to see that the system is developing itself to such an extent, penetrating all districts, superseding all other communications, affecting every species of public and private interests, and acting as the life blood arteries of the empire, as to render it probable almost to certainty, that the time must come when this great public trust can no longer be left to the management of private companies scattered over the face of the country. In truth, it seems only a question of time; railways must be made subject to some unity of management, and through whatever intermediate process it may pass, that management must finally be vested in the Government of the country."

PUMPS AND DRINKING FOUNTAINS.

Our whole confraternity of working people have a good deal to do and to bear with. Their hours of labour are long, and their work, for the most part, monotonous and unremitting. It is very difficult, if not impossible, for any one who has not had a trial of it to realise to himself what it is to get out of a warm bed at five o'clock on a cold winter's morning to begin some dull, mechanical, and totally uninteresting work; to plod at it all day long, till the nine, or the ten, or the twelve hours are over and gone; and then to find your way to a cold, cheerless room, or, still worse, a dirty coffee-house, of the universal English type. We say it is impossible to realise all this till you have tried it. It is the working man's lot in almost an infinite number of cases; and, what is more, there is at the present moment no escape from it, or the like of it, but the dangerous "public-house,"—a perfect harbour of refuge to such by the side of the aforesaid British coffee-shop. To many, many thousands of single working men does this apply with painful force. Letting this pass, we want to say a word or two about water, *i.e.*, spring-water; common cistern water, as supplied by the water companies; and our public drinking-fountains?

In the first place, it is in the recollection of most that not many years ago there was every here and there in London streets an old-fashioned pump, tall and gaunt enough, with convenient strong handle and iron ladle, from which the coolest and pleasantest of spring-water was to be had by the thirsty for the mere trouble of pumping for it, and as often as not without, for there seemed to be always ready and eager for the work of pumping some small mortal or other close by to pump for you. For the fault of some of these antiquated pumps, they have been either altogether removed or their strong handles are tightly chained to their strong bodies, so that pumping is impossible either to great or to little people. Science stepped in, and reported against them and their doings; and all of them, not those only in bad or suspicious places, were condemned. There was one, for instance, in the Regent's Park, far from impurities, and from which the water was always delightfully clear, and cool and pure to the taste; but it suffered with the rest of them. A not a little curious history would be that of the London pumps; even a list of them would be interesting to see. Some of them have been right down famous. There was and is "Aldgate Pump:" a queer-looking monolithic stone structure it was in times of yore, but it had to make way for Sir William Tite's more architectural structure. But even that improvement, but a year or two back, was doomed to destruction, and now there is another "design," by we know not whom, with a small attempt at a scientific and improved way of holding up a pail or water-can. But the famous pump is still there, luckily. There is another pump not far from it, and it is worth noting, for it is almost hidden among the slaughter-houses, but wherein the water, we are bound to say, is as good and clear as water needs be; and for this simple and plain reason, that the well or source of the water is so far from the surface, where the gas-pipes and drainage abound, that it does not suffer from either of them. Go through some 100 ft. or 200 ft. of sand, gravel, and closely-pressed earth and stones, and almost any amount of impurity is taken away from the water passing through it. It is simply a gigantic filter, and does its work thoroughly and completely, and beyond any power of imitation by any mere human contrivance, as may be sufficiently proved by a comparison between the water from a natural well, and the water as it comes to the Londoner from the scientific apparatus of the water companies. It would be difficult to instance a more useful public work than the "restoration" of a few of the old London pumps, deepening the wells from which they are supplied, so as to be beyond the reach of any contaminating influence. No water is like *spring* water, and from a natural well only is it to be got. There is another curious remnant of Old London water supply in the Strand, the well-known Roman Bath and Well, as it is called. It dates from the days of the Roman occupation, and is, indeed, a natural well of the purest and c ter. It is a plunge bath, and the wat tly changing. We will mention but the London pumps, though we coul a few which have given place to tle dribbling drinking-fountains, shut f the year round, with their little stream of semi-warm bad-tasting water and dirty mouth-pieces. The one we refer to is a right celebrated one,—almost, if not quite, classical. We refer to the one in the Dean's-yard, Westminster. Quite a story might be told of this famous little pump, and its varied fortunes. Two or three years ago it was a most unpretending iron structure, without ornamental details of any sort or kind; but happily for those who lived near it, and for St. Peter's College, and the clerical surroundings, it was always ready with its best of spring water. But alas! consequent on the startling fact of the great railway works then going on at the "Willesden Junction" of the North-Western Railway—and nothing less did it take to upset this sturdy little hydraulic apparatus—it suddenly (who would have thought it?) ran dry, and there was no more water from it, spite of all the pumping. So much did this grieve those who lived near,—and well it might, for it was the only *protected* pump for miles round,—that the non-supply of the water formed the subject of the "prologue" to the Westminster Latin play of that year, and the learned public were informed in good scholastic Latin verse that the scholars sighed for water, and that their pump was dry! But science was not to be beaten; for now, though you cannot draw spring-water, you may pump up common cistern-water from a slate tank sunk some foot or two beneath the ground, supplied as in an ordinary cistern, with the nearest company's water. The learned scholars still call it a well and a pump, though the pump is a superfluity and a sham, and the water *is not spring* water, nor from a well. What a pity it is that the Dean and Chapter do not here, in their snug and comfortable precincts, sink a shaft to a sufficient depth, and bring up from below a real well of pure spring-water, always drinkable, constructing an open marble or stone tank, as well as a pump, if that, indeed, be necessary,—*the water to be visible.* Thus may they set a good example to the rest of London; for what an infinite advantage it would be to have water,—spring-water,—over-flowing, fresh and clear, for the thirsty wayfarer. The common cistern-water, as supplied by the water companies, is hardly drinkable, so that few can avoid the public-house, even if they wished it ever so much. And here we connect the subject with our opening observations.

Notwithstanding the many, many evils resulting as we know from intemperance in this our country, it is not a little to be wondered at, considering the temptations, how very little there is, comparatively speaking, of downright "drunkenness." You may go through on a Saturday night, where everything is favourable, miles on miles of low East-end streets, look into every comfortably-warmed and lighted "house," and see absolutely nothing of the intemperance so often cited. And, at the same time, you would be compelled to ask, Where else are to be found the passing comforts of light, warmth, and drinkables? Not in the open streets, certainly; for in no city in the world are the *streets* so entirely empty of every kind and species of comfort and accommodation. There is, in truth, in this tight little island no *public life*, no open-air and street life, such as there was in the great antique cities of days gone by, or such as is yet to be seen in Oriental cities. John Bull is a home mortal, and it is his weakness as well as his strength that he lives and enjoys himself, after a fashion, in his own house, almost unconscious that there is a street on the other side of his own street-door. But though he knows it not, there is; and there are those who almost literally live in them, night as well as day. It is a curious subject, well worth a little thought and a few words, but not now.

METROPOLITAN TRAMWAYS.

On Monday last, the joint committee of the members of Lords and Commons met in one of the Lords' committee-rooms, to take evidence for a report on the reference committed to them. This reference, it may be remembered, embraces the points,—whether it is desirable to increase the number of tramways in the metropolis; whether limits should be fixed to the metropolitan tramway area; what such limits should be; under what authority tramways should be constructed and managed; through what streets or thoroughfares additional tramways, if any, should be authorised, and under what restrictions. The committee consists of Earl Beauchamp, the Earl of Longford, the Earl of Airlie, Viscount Eversley, and Lord Clinton; with the following members of the Lower House:—Mr. Sclater-Booth, Sir Ed. Colebrooke, Mr. Arthur Peel (of the Board of Trade), and Messrs. Arthur Guest and James White. Viscount Eversley, late Speaker of the House of Commons, presided, and conducted the proceedings with his characteristic urbanity.

The witnesses examined at the sitting were Messrs. C. Hopkins, engineer, of the London Street Tramways Company; Mr. Rowbotham, manager of the South London Tramways; Mr. Sheldon, who has been extensively engaged in tramway promotion at home and abroad; and Mr. John Morris, of the firm of Ashurst, Morris, & Co. The most important evidence presented to the committee was eloquent and interesting, although silent; it consisted of a very large diagram, showing, in distinctive colours, the tramways in the metropolitan district already constructed and opened, or authorised; the additional lines proposed, with which the promoters intend to persevere in the current session; and the additional lines that have been proposed, that they are ready to give up, if the joint committee, or the private Bill committees to which the projects may be referred, are so minded.

The authorised lines show, as yet, a very partial system of tramway accommodation to the metropolis. They are almost exclusively to the east of a line drawn north and south intersecting

Charing-cross, and afford communication to north, south, north-east, and south-east, on the proposed line, and from Charing-cross as a centre, but do not touch the populous districts to the north-west and south-west, excepting only some lines, inconsiderable in extent, in the neighbourhood of Camden-town, and an irregular triangular communication between Vauxhall and Lambeth Bridges and Victoria Station.

The chief thoroughfares now or to be traversed by the tramway-cars are,—on the south side, running mainly east and west, from Victoria Station across Vauxhall Bridge, *viâ* Kennington, past the Oval, Camberwell, Peckham, Hatcham, New Cross, Deptford, and Greenwich, to Woolwich Arsenal. A loop is formed that passes from Victoria Station, along Lambeth Bridge, and along Lambeth-road to Blackfriars-road, and along that road to the south end at Blackfriars Bridge. At the junction of Lambeth-road and Blackfriars-road another authorised tramway reaches to Westminster Bridge on the Surrey side. It may be here convenient to say that the extensions in this locality that are to be persevered with include a short length to pass along Westminster Bridge and along the Victoria Embankment to the end of Whitehall-place; the promoters being willing to surrender a short length to Whitehall.

Another short length in this locality that they propose to persevere with is a continuation of the tramway communication from Victoria Station to the end of Victoria-street, leaving there a short gap between the point indicated and Westminster Bridge.

Other important extensions to the South of London are from the Strand, along Waterloo Bridge and Waterloo-road, to the junction already referred to, from which the authorised lines will afford continuous communication with Clapham, Brixton, Camberwell, and from Camberwell with all the localities east and west of that point on the original Pimlico and Peckham and Greenwich lines. From New Cross a tramway is already authorised to Westminster Bridge, passing along the Old Kent-road, and past the Elephant and Castle. The additional links, however, requiring to be filled in are from along the Kennington Park-road, past the Elephant and Castle, to the end of Blackman-street, Borough; and from a junction there a new line continuing the communication into the Old Kent-road. It is not proposed to traverse High-street, Borough by tramway, but it is designed to lay a line from Stamford-street, along Southwark-street, to the London Bridge station. The proposed line to cross London Bridge is also surrendered, and the line along Southwark-road and Southwark Bridge; and the authorised crossings by tramways over Thames bridges, it will thus be seen, are by Vauxhall and Lambeth, and the additional crossings for which powers are to be asked are by Westminster, Waterloo, and Blackfriars Bridges. The proposed surrenders on the Surrey side of the Thames, in addition to those already indicated, are from Battersea Park to Wandsworth-road, and along that road, by Kennington-lane, to Newington, with a fork from Vauxhall Station, along the Thames Embankment to Westminster Bridge.

In the City the chief surrenders are a proposed line from Holborn to Ludgate-circus; a line from Blackfriars Bridge, and along Queen Victoria-street, to the Mansion House, with another from Aldersgate, *viâ* St. Martin's-le-Grand, to the east end of St. Paul's; thence along Cannon-street to King William-street; and the continuation from Moorgate-street, past the Bank of England, and along King William-street, intended to have been continued along London Bridge, is also given up.

Turning now to the tramways proposed or relinquished in the north and west, it would appear that the great area bounded by Paddington, Marylebone-road, Tottenham Court-road, Holborn, and New Bridge-street, Blackfriars, with the Thames for its southern boundary, is, for the present, to be left untraversed by tramways. The lines surrendered in this area include one from Kensington, *viâ* High-street and Knightsbridge, to Hyde Park Corner; and another from Notting-hill, Uxbridge-road, and Oxford-street, to the junction of that street with Tottenham-court-road. It is also proposed to give up proposed lines between Camden-town, by Albany-street, into the Marylebone-road, and two short lengths, one from the Marble Arch along part of Edgware-road, the other from Praed-street into the Uxbridge-road.

The new lines in the north and north-west, for which powers are to be asked, are very important, and include,—Holborn, Oxford-street (as far as Tottenham-court-road), Tottenham-court-road, Harrow-road, Edgware-road, Finchley-road, Caledonian-road, and King's-cross-road; with a connexion east and west between Islington and Bayswater, by the Pentonville, Euston, and Marylebone roads. The proposed lines are intended to join up numerous defective links in the metropolitan tramway system, and provide continuous tramway communication from Upper Holloway on the north to Camberwell, Brixton, Clapham, and numerous other localities in the south, with "correspondence" lines radiating in almost all directions, excepting to the west.

The Committee, at its rising, adjourned to Friday, the 19th instant.

HINDRANCES TO THE PROGRESS OF APPLIED ART.

In the course of a paper under this title read at the Society of Arts, Dr. Dresser said:—One of the chief hindrances to the advancement of decorative art is to be found in designers themselves, for there are many pattern-drawers who are a disgrace to the profession, inasmuch as the works which they produce manifest only gross ignorance, and are, therefore, altogether unworthy of notice. Of these I will not speak, but I desire that they should understand that whatever is produced which is of debasing character tends to the extermination of decorative art, for who would not prefer a plain article to one covered with graceless forms and inharmonious colours?

Passing from these men, to whom the name of "artist" cannot be applied, to those designers who have a certain amount of art-ability, we notice that the works produced by these latter are often inconvenient to use while they are beautiful in form, and are thus of a character calculated to bring art into disrepute. An art object should be useful as well as beautiful, if it is intended to fulfil a utilitarian purpose; yet not one poker out of a hundred is so formed that it can be used with comfort, nor is one tea-pot out of fifty so made that it will admit of the tea being poured from it without an expenditure of force greater than is necessary in order to the support of the weight which has to be lifted. By leverage a pound may balance a hundred-weight, as in the steel-yard; so in the case of a tea-pot, by leverage that which weighs four pounds may be as heavy to lift as that which weighs eight. Although the law which regulates the placing of handle and spout on all vessels from which liquids are poured is thoroughly understood, yet it does not appear to be known to one designer in a hundred, judging from the vessels which we see offered for sale in our shops. In like manner, pokers have become so inconvenient to use that it is impossible to break coal or even poke the fire with one without hurting the hand; hence, ladies have begun to regard fire-irons as mere ornaments, and to keep a little second poker and tongs for *use*, which latter are hidden in some corner, as objects unfit to be seen. There is nothing which tends to retard the progress of applied art more than the production by designers of objects which are inconvenient to use; and be assured that the most perfect beauty may be combined with the most complete utility; in other words, that which is most beautiful may be perfectly useful. How is it, I ask, that designers will not inform themselves upon subjects which, to them, are all-important, and without a knowledge of which they cannot produce acceptable works? I am often amazed at the ignorance of my fellow ornamentists upon subjects which they ought perfectly to understand; and yet many of these men can draw well, and combine forms in a truly artistic manner, but their works, through not being adapted to answer the end of their creation, only tend to bring the beautiful into disrepute, by leading persons to suppose that if a work is graceful and lovable it cannot be used with comfort.

Our worst enemies are those of our own household; so, in like manner, the worst enemies to the progress of applied art are ignorant designers. If we, as designers, will but educate ourselves, we shall thereby remove one of the chief hindrances that impede the progress of applied art.

It is a strange thing that to this hour the great majority of the designers, or pattern-drawers, employed in our manufactories are men almost wholly without education, and chiefly from comparatively low life. The son of a weaver in a carpet-works or lace-factory, if he manifests any taste for drawing, is put in the designing-room and is trained to draw patterns; but as he is placed there at the age of from ten to twelve years, and is the son of parents who could not afford to have him educated beyond being taught to read and write, he has but little knowledge when he commences his art-training; and as, in the great majority of designing-rooms, he never sees a work on ornament, nor a good example of true art-work, he gains simply a technical knowledge of the manufacture, and acquires no insight into the character of true art. A man cannot help his origin, neither is he to be despised for being the child of poor parents; but if he remains in ignorance he cannot be expected to produce noble works, nor to exalt the manufacture which he strives to adorn with forms and colours. While a man is not to be blamed for being born of poor parents, he is open to censure if he does not strive to gain whatever knowledge is placed within his reach. Nearly every town in the kingdom has now its drawing-school, where a certain amount of art-knowledge may be gained, and connected with these schools there are frequently art-libraries. That youth who is worthy to be called an art-student will avail himself of whatever means are open to him, and even if he be employed for long hours in the factory, he will strive by reading, sketching, and, beyond all things, by thinking, and by the study of nature, to gain such knowledge as will lead him to draw patterns such as will please persons of education, by revealing to them the fact that he who addresses himself to them through the agency of form and colour is also a man of education.

If it is any consolation to you, my fellow-students of applied art, let me say that I, with you, have felt the want of education, and have known the poverty of small means, but by foregoing for a time the pleasures which others enjoyed, and by continued close application to the study of our beloved art, I gained the victory over that poverty, and that utter want of education under which I for a time suffered; and now I can say that I sit at the tables of rich men, and that men of learning honour my table with their presence. I would not for a moment say what I do were it not for the thought that these words may encourage some poor student to work on till he rises through his poverty to that position in which he can present his works fairly before our notice, and charm us with his knowledge.

Certain manufacturers may truly be regarded as hindrances to art progress. Some men are honourable, others are dishonourable; some men are noble, others are ignoble; some men are pioneers of progress, others retard all onward movements. It is curious that there are many men who would not rob another of a farthing, and yet who eagerly look for every new pattern which more honourable manufacturers than themselves produce, with the view of copying them if they be good and are not protected by registration, or of producing others as nearly like them as they can if they be registered. Such men I regard as not only hindrances to the progress of art (for who likes paying a high price for a well-considered design if immediately it is issued others copy the idea, if not the actual design, and by saving the cost of the pattern are enabled to undersell the original producer?), but as nothing more nor less than thieves, who should be engaged on the tread-wheel with others of their kind. This detestable piracy of new patterns, which is constantly carried on by those who are truly little men, is one of the great hindrances to art progress. Did it ever strike these detestable rogues, I wonder, that by every piracy they commit they not only degrade themselves but exalt both the manufacturer and the designer of the pattern which is stolen? The very theft acknowledges the want of power to produce what is of equal merit. To those noble men who continue to produce what is new and what is beautiful, while they constantly suffer from theft, I would say,—Persevere, for the tribute which the mean pay to your nobleness and enterprise is sufficient in itself to build up in time your worthy reputation.

Much has been said respecting the unwillingness of manufacturers to issue designs of an art character, and to pay such prices for patterns as will fairly compensate the designer for producing a carefully-considered work. I have had as much to do with manufacturers, I think, as most artists, and perhaps more, and I am bound to say that I have found most of them both willing to try new things and to pay handsomely for well-considered designs; but as the object of

business is, in a sense, money-making, the manufacturer cannot be expected to produce many patterns such as will not sell when placed on the manufactured article. Some men I could name who nobly contribute towards the education of the people by yearly producing a few works in good art which do not command a large sale, owing to their being too advanced for the public taste; but these men are few in number, yet they do exist amongst us. However, with the exception of a few mean hounds, such as we find in every class of society, I exonerate manufacturers from the charge of being hindrances to the progress of a true decorative art.

The public, in some instances, impedes the progress of art. The public is of two classes,—the educated and the uneducated. The educated, in many instances, seek better art than is to be found on the goods procurable at most of our shops; but the utterly ignorant, having no art knowledge, are pleased with whatever is "loud" and showy. These latter undoubtedly hinder the progress of art, as some manufacturers will cater for the patronage of the most vulgar; but this hindrance will disappear with the increase of art knowledge.

Whatever is bad in art tends to vitiate taste. If a person whose taste is highly cultivated, and who is sensitive to every deformity both in colour and form, is obliged to contemplate what is ugly, he, after a time ceases to feel the hideousness of what he views; thus, if he takes lodgings by the sea-side, and the walls of the room in which he sits are covered by a hideous paper, and the floor by an obtrusive carpet, and if every piece of furniture is uncomely, and every so-called ornament in the room a mere offence to good taste, however repulsive all this may be when first seen, it will become less and less offensive as he dwells upon it, until finally it ceases to impress the sense as that which is uncomely at all; and in order that its true nature be understood the judgment has to be appealed to: thus the sense which leads us to discriminate between the beautiful and the uncomely becomes deadened. This leads us to perceive the necessity for surrounding ourselves with beautiful objects, if we would keep alive within us a quick perception of the beautiful, and to see that whatever is presented before us which is beautiful tends to exalt our taste and sharpen our perception of the beautiful. But we also perceive that whatever around us is not excellent tends to degrade our taste and to deaden our perception of the refined and graceful. This brings me to consider the effect which museum objects have upon the taste of the country.

The Chairman (Sir Digby Wyatt), at the close of a discussion which followed the reading of the paper, said success in certain technical directions was of the utmost consequence, and, to a great extent, the museums which had been most useful in foreign countries in instructing the workmen, were those in which elegance of design was the first consideration, and the illustration of the historical arts of the country the second. He was far from desiring to see an academy for applied design in one place, and one for imitative design in another. The proper thing would be to amalgamate the two, and make one great central institute, and then some good might be done. He should like to see more attention paid to applied art in the Royal Academy, and considered it a disgrace that Mr. Owen Jones was not an associate of it. With regard to schools, it must be remembered that the first essential was to teach a person to see with his eyes, and to work or imitate with his hands,—to make those two organs so tractable that the student might, in the first place, so distinguish tints as to imitate colours accurately. Until he had learned the whole gamut of colour he could not produce a pattern or design, however clever he might be. The reason why, as Dr. Dresser had said, students from South Kensington were not found to be of much use in designing-rooms in manufactories was, that the student becoming learned, imitative art went where it was not required. A manufacturer might send for a student, thinking he would be a treasure, and find when he came that he could not design the branch of manufacture which he wanted, though no doubt he could do something else very well. In truth, he wanted that practical element in education which should really be the life's labour of every man. The common error with regard to education was to suppose that, having been taught up to the age of twenty, we are then to cease learning, and only practise what we know. Education was then in reality only beginning. When a student had been thoroughly taught form and colour, and was then set to master the practical requirements which he had to meet, he would become a much more valuable artist than one who had been simply dragged up, step by step, in the manufacturer's designing-room. Elementary knowledge and correct principles should be taught in schools, but the same results must not be expected from a youth as from a man with life-long experience.

LIVERPOOL WATER-COLOUR SOCIETY.

This society, at present, we believe, the only water-colour society in the provinces, has been formed with the laudable object of promoting and extending the taste for this branch of art in Liverpool and the neighbourhood. The promoters are chiefly local artists, and the Inaugural Exhibition was opened on the 15th inst. The collection numbers somewhat over 200 drawings, among which are included contributions from eminent English water-colour artists,—Branwhite, Newton, Absolon, J. M. Jopling, and others; most of whom figure in the catalogue as "honorary members." With the exception of these works with well-known names (and they are not very numerous), the standard of merit is not high. Mr. R. T. Pritchett, a non-resident member, is an extensive contributor of drawings, all showing more or less ability, of which a little "Sunset on Esher Heath" is the best. Among local names challenging attention are those of Messrs. Bond, Norbury, and Sullivan; the works of the last-named being, however, more ambitious than successful. Mr. Clark Stanton, of Edinburgh (a name not familiar to us), contributes, among other things, a slightly finished drawing under the title "A Rest by the Way," a young lady resting on a bank by the roadside, which indicates, in colour and general treatment, no ordinary degree of refinement and artistic feeling.

While welcoming with pleasure all signs of a revival of art-interest in an important town where it has long been dormant, we cannot but regret the want of judgment shown in regard to the work admitted into this first exhibition of a new Society. A considerable proportion of the drawings hung are poor and commonplace to the last degree; some are so ludicrously bad that they can only have been hung with a view to cover the walls. This is not the way to advance art. Better confine an exhibition to fifty drawings, and have those good, than cover the walls with productions which can only have a deteriorating influence (if any) on public taste. We hope the Society will manage these things better in future.

FALL OF IRON ROOF, SARATOGA SPRINGS, U.S.

Some short time ago the roof of the new passenger depôt at Saratoga Springs fell.

The roof was arched, of 30 ft. span, and made of corrugated iron, with wrought-iron tie-rods, five-eighths of an inch in diameter, and was supported by round columns, 4 in. diameter, 15 ft. distant from centres. On the inside of each column, about 5 ft. distant down from its top, was attached one end of a wrought-iron tie-rod, supporting the roof; and on the opposite side was a bracket, extending out 10 ft., whose bottom exerted a diagonal transverse strain in the same direction as the tie-rod. These brackets supported a roof, forming a shed over the gangway beyond the arched roof, making, with the 30 ft. span of roof, an entire width of 50 ft. Mr. P. H. Jackson, inspector of iron construction, New York, writes,—

I have been induced to go into a calculation of the strains on the weakest part of this mantrap, namely, the columns and tie-rods.

The weight of snow and ice upon the roof, in accordance with the leading authorities, is considered at 40 lb. per superficial foot as a maximum load in our climate. On the day of the falling of this structure, there had been a light fall of snow, and the ground was frozen. I question if the weight on the roof at the time exceeded 20 lb. per foot, as snow is ordinarily light. What causes it to become heavy is a subsequent fall of rain, then freezing, and snow again. Forty pounds per foot is considered a maximum load under the most unfavourable circumstances.

The column was 4 in. in diameter, and, say, 1 in. in thickness, and about 18 ft. long. Its proportion of vertical pressure would be the weight coming upon half the roof of 30 ft. by 15 ft. distance from centre to centre of columns. Taking the weight of roof alone, exclusive of any contingent weight, at 12 lb. per foot, we have 52 lb. per foot for the weight of roof and load upon it.

* * * *

The following is a summary of the strains on the column:—

Vertical pressure, weight of roof, 6·15 net tons; unnecessary transverse strain of tie to break the column across, 11 net tons; diagonal transverse strain at the bottom of the bracket, in the same direction as that exerted by the tie, $2\frac{3}{4}$ net tons.

Taking these spindle columns, whose dimensions are about suitable for a summer-house or verandah, at a safe weight of one-fifth the breaking weight, when subject to a vertical load, and then only when the ends are at planes with their axes, we have the safe weight at $8\frac{8}{10}$ tons. Nothing less than one-fifth the breaking weight will do, as at one-fourth the breaking weight it was found, by experiment, that incipient crushing took place. This safe weight allows nothing for a lateral blow caused by merchandise falling, in transmission, against the column. For a column where transverse strain is to be exerted, calculation should be made in accordance with the formula for strength of beams, as well as that for the columns.

In regard to the tie-rods, they were not nearly up to the standard required for safety; a $\frac{5}{8}$-in. round rod is equal to about 3-10ths square inch of cross section. The working strain should not exceed the limit of its elasticity, which is about 8 tons per square inch. The Board of Trade of Great Britain permits, as a maximum working strain, but 5 gross tons per square inch of cross section. In this case, the tie-rods should have been at least $1\frac{1}{4}$ in. in diameter to resist the thrust of the arch; and the columns 7 in. in diameter, and 1 in. thick, providing the tie-rod was not attached to it.

"UNDERGROUND JERUSALEM."

Mr. William Simpson, who has made himself known by many illustrations produced under difficulties, and especially by his pictures of India, Cashmere, and Russia, which he visited on the occasion of the marriage of the Princess Dagmar, has plunged into the cisterns, vaults, and drains opened by Captain Warren in Jerusalem, and has recorded, with faithful, and in most cases effective, brush, all that was to be seen. Many of these excavations have since been filled up again, thus making the drawings additionally valuable.

The Church of the Sisters of Zion, of which he gives a view, although not underground now, was so until very lately. The arch behind the altar was recently laid bare, and this is the first drawing of it since. One side of this church is formed by a wall of rock cut in past times; and underneath the convent are two tunnels, one of which is represented in the collection. They are of some importance, as bearing on the water supply of the Temple. The Tomb of Joseph of Arimathea, almost unknown, is given. The entrance to the Royal Quarries was only discovered a few years ago, and may be said to be entirely new as a subject for pictures.

The drawings are on view at 48, Pall-mall, and will reward a visit.

At the next meeting of the Society of Biblical Archæology, Mr. Simpson is to read a paper on "Underground Jerusalem, more particularly the Plateau of the Haram es Shereef," when some interesting information will probably be added by members of that society.

HOSTILE OCCUPATION OF REGENT-STREET.

The demon that presides over the local government of London seems to delight, not in evolving order out of chaos, but in blending the elements of order in inextricable confusion. The London season being at its height, the time has naturally been selected for the occupation of Regent-street by a hostile force of "navvies." We pause to describe the scene, now under our eyes. Trestles are placed in the very centre of the roadway; veritable barricades they prove, whatever might be their fate at Paris. Under shelter of this *tête-de-pont*, a small gang of sturdy labourers proceeds to break up the surface of the road with pick-axes. New stones,

rudely broken into blocks of some eight to ten cubic inches each, are laid in a thick stratum along part of the street. Close by this stratum of destruction to horse and to carriage, one or two of the biggest "navvies" are, as we write, coolly scattering shovelfuls of stones that have once formed part of the "metal," scattering them with that peculiar sweep and fling of the arm by which the obnoxious missiles can be spread over the widest surface, and all thus rendered at once most useless and most dangerous. A horse-roller is at hand,—as if to make the mockery of the patient public more keen. After pausing to watch the whole process for some time, we came to the conclusion that it would be difficult to suggest any alteration of plan that could increase its danger, its costly wastefulness, or its cool insult to the public; or that could render the work of the road surveyor at once more inefficient and more expensive.

Where are the officers of the Society for Prevention of Cruelty to Animals? No owner of a fine horse can now ride or drive without imminent danger of laming the animal. No carriage can go along this main West-end thoroughfare without having at least a month's durability shaken out of its future existence. It is difficult to account for the procedure. Is it done with the idea, like regulations made in the time of James I., of keeping strangers out of London? Unless the most unfit time *must* be selected for re-metalling Regent-street, the operation could and should be effected between the hours of midnight and six in the morning, by an adequate force of men, who should strip, cover, and properly level a portion of the street at a time; consolidate it by the steam roller, leaving it perfectly fit for traffic; and disappear, like good people, before the London cockcrow.

THE PENTATEUCH.

A COMMITTEE of Rabbis and doctors, at the request of the Society of Biblical Archæology, have met at the Soane Museum, to examine the sacred roll of the Pentateuch sent over from Aden by Lieut. Prideaux, and presented by him to the Society. Rabbi Hermann Adler; Rabbi and Professor Marks; Rabbi Schiller Szinessy; the Rev. George Small; Rev. Dr. Currey, Master of the Charterhouse; Iltudus T. Prichard; S. M. Drach; Joseph Bonomi, Curator of the Museum; and W. R. Cooper, Secretary of the Society, were present; and Professor Donaldson, Ph.D., as Secretary for Foreign Correspondence, and one of the trustees of the Soane Museum, was in the chair. The examination was very minute, and occupied a considerable time; and with the intelligent explanations of the Cambridge Professor of Hebrew, and the other Rabbis, brought to light many important peculiarities. The most ancient part dates from the tenth century. A full report will be read at the meeting of the Society on the 7th of May.

THE TRADES MOVEMENT.

Cambridge.—A deputation appointed by the building operatives has been received by the representatives of the Builders' Association. The chair was occupied by Mr. Bell; the other members of the Builders' Association being Messrs. A. Gray, T. Bradwell, Thoday, Kett, jun. (secretary), and Tompkins. The deputation from the building operatives consisted of Messrs. F. Bowick, J. H. Cooke, W. Cooke, Hyson, Loenes, W. Scott, and R. Riddle (secretary). The deputation said they wished to know whether the masters would accede to fifty-four hours, so as to employ the men summer and winter. They also wanted an increase of wage of 6d. a day. The average wages of the men in Cambridge were 24s. In other places, the men were receiving as much as 27s., 28s., 29s., and 30s. One of the deputation said that (as a labourer) he was receiving 15s., out of which he had to pay 9s. 4d. per week for bread and flour, 2s. 2d. per week for rent, and 1s. 2d. for 1 cwt. of coal; and he had eight mouths to feed. Some of the deputation complained that they were unable sufficiently to support themselves on their wages. Others wished for more time for recreation or amusement. On the part of the masters, it was remarked by the Chairman and Mr. Gray that the employers were perfectly willing to make an alteration if it could be done satisfactorily. They denied, however, that Cambridge was paying less than other places; on the contrary, the chairman produced evidence to show that the wages were quite as high as in Huntingdon, St. Neot's, Diss, Bury St. Edmund's, Ely, Lynn, Norwich, or, in fact, anywhere in the Eastern or surrounding counties. After a long and desultory discussion, in which various points *pro* and *con.* were argued, the chairman said the matter would be laid before the Builders' Association, and the result duly reported to the operatives.

Sittingbourne.—About 100 brickmakers at Sittingbourne were engaged at 3s. 6d. per thousand, and lately the masters gave an advance of a penny. The gangs demanded 2d. more, which the masters conceded conditionally on the market remaining at its present height, and the men leaving 6d. in hand as "pence-money." This was refused, and the men have struck.

Dumfries.—The masons in the employment of Messrs. John Edgar & Son, Dumfries, have struck work. It appears that the firm had employed two plasterers, to point the interstices in the freestone courses in a range of dwellings they had contracted to erect. To employ plasterers at such work has hitherto been a common practice; but a meeting of the trade-union was held, at which it was resolved, that unless the plasterers were dismissed, Messrs. Edgar's workmen were to strike, and a deputation was appointed to wait on their employers. At breakfast-time next day the deputation saw Mr. Edgar, sen., who, on being told the object of the deputation, said that he had engaged the plasterers for the job, and was determined they should finish it, whether there was a strike or not, upon which the whole of the workmen left, but did not remove their tools.

Hawick.—Some time ago the journeymen connected with the building trades in Hawick,—masons, joiners, and plasterers, resolved to ask for the adoption of the fifty-one hours system, with an advance of ½d. per hour on wages, from the 8th of April. The present rates are,—masons, 6d.; joiners, 5½d. per hour; and plasterers, 24s. per week. The master masons declined compliance with any of their demands, and no further action has followed. The master plasterers agreed to give 5½d. per hour, and left it to the option of the men to work either nine or ten hours daily, after the 8th of April. The operative joiners have refused the offer of the masters to advance wages ½d. per hour, and another farthing on the 1st of June, with the option of working nine or ten hours, and resolved to stand out for their full demand of ½d. per hour advance. As the employers declined to concede these terms, a number of the men, but not all, struck work.

THE COVERED MARKET, PRESTON.

THE Preston Covered Market question, to which we have already alluded, is, we regret to say, far from being settled. The new contractors, Messrs. Bennett & Co., of West Bromwich, engineers of good repute, have refused to proceed with the work, on the ground of radical defects in the design, which they allege preclude the possibility of a safe structure being erected from Mr. Garlick's plans. The Messrs. Bennett say that having investigated the principles of construction of the proposed roof of the Covered Market, they have discovered that "it is utterly impracticable to construct, with safety, a roof in accordance with the details shown on the plans;" and they speak of "certain fatal defects in the structure that render the safe construction of the roof impossible." The Markets Committee, as we have already mentioned, resolved to call upon Messrs. Bennett to execute their contract, and the Council has now confirmed the resolution of the committee. The contractors urge the Council to refer the plans to some disinterested engineer of high standing.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.

ON the 6th inst., the members and friends of this Society paid a visit to the works of the Native Guano Company (by permission of the directors), situated within the grounds of the Crossness Pumping-station of the Southern Main Drainage system.

The system of sewage conversion about to be tried is that known as the "A B C" process, and will soon be in full operation, it having already been experimentally tried here on a small scale. The *modus operandi* was fully explained to the members, and some samples of sewage were treated for their information. After fully inspecting all the works, they were shown some samples of dried sewage, which when ground is sold as manure (native guano), and was said to be much sought for by farmers who had once tried it. The members then, by permission of Mr. Bazalgette, visited the engine-house and works of the Crossness pumping-station, where the four engines required to pump the sewage up into the reservoirs were examined and explained to them. These engines caused much interest on account of their great size and power. Two are continually kept working, each making six strokes per minute, and pumping 2,000 gallons at each stroke. The other two are kept as reserve engines, in case of a storm occurring in the London district, in which case the united power of all four engines, pumping 48,000 gallons per minute, is not more than sufficient to keep under the storm-water pouring down.

SCHOOL BOARDS.

Ipswich.—At a meeting of this Board the clerk stated that, in accordance with the directions of the Board, he had written a letter to the Education Department, the reply to which says,—

"There should be sufficient space in the general room and class-room together to accommodate all the children. If the general room is of itself large enough to accommodate all, and is then sub-divided into class-rooms, it will not be necessary to provide additional class-rooms; but if the general room is not large enough, and the accommodation should be calculated at nearly ten superficial feet per child, then it will be necessary to furnish class-room for the deficiency.

Supposing that the aggregate area is about 10 ft. per child, it will be sufficient if, in the general room, accommodation is provided at the rate of 4 ft. per child for the whole number of children provided in the school and class room.

There should be not less than two class-rooms for each school: each class-room should be about 20·0 by 16·0.

In reply to your final inquiry, I am directed to state that an additional class-room allowed to a drawing-class may be used alternately by boys and girls, provided it is so placed as to be conveniently accessible for each school."

Some conversation then took place with reference to the kind of division the Education Department would require between class-rooms in a large school-room divisible into class-rooms.

Aberystwyth.—The following architects were a short time ago invited to send competitive designs for the new schools at Aberystwyth, providing accommodation for 600 children:—Mr. J. P. Seddon, Messrs. George Jones & Son, Mr. R. Owens, Mr. Sherwin, and Messrs. Szlumper & Aldwinckle. The Board have selected the designs submitted by the last-named gentlemen, and the buildings will be commenced at once.

Great Driffield.—Mr. H. J. Paull has been appointed architect to the School Board of Great Driffield, in the East Riding of Yorkshire. A block of school buildings is to be erected forthwith for 700 children, on a site on the Bridlington-road, in the outskirts of the town. The same gentleman holds the appointment of architect to the Hope School Board, near Wrexham, and plans are passed and tendered for to accommodate 600 children for that Board in two blocks of buildings, viz., 250 at Ffrith, and 350 at Hope.

ARBITRATION IN THE BUILDING TRADE.

MR. RUPERT KETTLE has been sitting in Birmingham as arbitrator over a conference of masters and representatives of working men in the building trade. The carpenters, labourers, and plasterers were represented. Notice had been given by the men, under the rules agreed upon in 1867, for a reduction of the hours of work to 50½ per week. After the conference had lasted some hours, the employers proposed that the hours should be fixed at 54. On the other side, a proposition was made that the hours should be 53. On this difference there was a split, all the masters' representatives voting on the one side, and all the men's representatives on the other. The matter was left to the decision of Mr. Kettle, who, in giving his award on the general question of time, said:—

"In deciding this question, I have not only to consider the desires of the parties in contention before me, but the combined interest of both, so as not to disturb their trade, and check the desire for building. I have come to the conclusion that, although from what has happened in this town and elsewhere, customers may be disposed to accept the result of what is called the nine-hours movement, they could not at present willingly enter into bargains based on still shorter hours. I therefore, as much in the interest of workmen as of the employers, decide that an average of nine hours a day,—that is, fifty-four hours,—be the working week. This does not apply to the three winter months."

The deputations then made a vain effort to arrange the hours for beginning and leaving off work. These deputations then withdrew, leaving the question in dispute to be settled by each branch for itself. The plasterers' deputation next took their place at the table, and the question which had just been debated by their predecessors was again discussed. The time for beginning and leaving off work could not be agreed upon, and the Umpire said he would prefer not to decide that question by itself, but to take the whole case together. The question of wages was then discussed. The present rate of wages in the plasterers' trade is 6½d. per hour, and the men's demand was for 7½d. Mr. Briggs made an offer on the part of the employers of a rise per hour equivalent to the reduction of time, namely, a farthing per hour. The Umpire observed that it was five years since there had been a rise of wages in this trade in Birmingham, and that was a long time, as things were going now. He would ask the representative of the employers to consider whether their proposal to give a rise equivalent to the reduction of time was equal to the increase of wages which the nine-hours settlement had practically amounted to in other trades and other places. After some discussion and a short adjournment, Mr. Holmes proposed that the payment should be 7d. per hour, as a settlement for two years. This proposition was seconded and discussed without result, and the Board proceeded to consider the question of overtime, but no conclusion was arrived at. It was agreed that 2s. should be allowed for lodging-money on out-town jobs, and that payment of railway-fare should be left for arrangement between the parties. The Court shortly afterwards adjourned.

HEIGHTS OF BUILDINGS AND ANGLES.

A "Level and Angle Indicator" has been brought out by Messrs. Fletcher & Sinclair, of Liverpool, including, in a compact case, a compass and sun dial. It is described by the inventors as being a simple form of theodolite, there being a sight hole and horizontal wire at the base, and its price is within the means of most mechanics. It strikes us that the instrument will need great practice before it can be used with anything approaching accuracy, and then it must of necessity be placed on some steady support. All who use the theodolite know the care and the anxiety required to sight and adjust the instrument by means of finely-cut screws, and standing on a stiff stand. The Angle Indicator may be of service for taking approximate angles in the case of those who will master it.

NEWGATE AND THE SESSIONS-HOUSE.

Having read in your paper that the Mid-London Railway Company have purchased the Christ-Church or Blue-coat School buildings, with four acres of land, for 600,000*l.*, the governors of the school intending to erect schools in different quarters of London, and one in the country for 1,000 scholars, it appears that land in the locality of Newgate-street must be of enormous value; and an excellent opportunity offers itself for the pulling down of that melancholy building called Newgate and the adjoining Sessions-house, disposing of the sites, and with the proceeds erecting a new gaol and sessions-house on the confines of the county of Middlesex.

It has always occurred to me that it was unjust that the county of Middlesex should have the odium and expense of finding a sessions-house and a gaol, for the trial of the offenders (in addition to their own) for the counties of Surrey, Essex, and Kent, according to a certain radius from the centre of London, which the Act establishing the Central Criminal Court has enacted; for it gives the world an exaggerated idea of the state of crime of the county of Middlesex, although, no doubt, the present position of the Central Criminal Court is very convenient for the barristers who have chambers in the Temple, Lincoln's Inn, and Gray's Inn, to attend; but in consequence of the facilities for travelling now offered by the railways, it is no longer necessary for gaols to be fixed in the heart of populous cities.

The surroundings of the melancholy Old Bailey are very different at the present time from what they were twenty years since. It had not then the terminus of the London, Chatham, and Dover Railway on Ludgate-hill, the Metropolitan Railway terminus in Farringdon-street, and the forthcoming Mid-London Railway Terminus, in Newgate-street. Let the citizens take into consideration the changes time has made in their City, and what a great improvement would be effected by the pulling down of Newgate Gaol and the Sessions-house, and making a communication from Farringdon-street, crossing the Old Bailey to Paternoster-row, leading to Cheapside, which every one must consider a great and necessary improvement, and one that could be made, from the high price of land in the locality, profitable to the City of London.

I have abstained from suggesting on what part of Middlesex the new gaol of Newgate and the Sessions-house should be built. Middlesex is a large county, and a suitable spot could be selected, with railway facilities; so that, as county gaols are now conducted, only the smallest amount of inconvenience to the particular neighbourhood would be experienced.

Marco.

THE RAILWAY BRIDGE IN LUDGATE-HILL.

Why must this be always called "the ugly bridge," as, for instance, by "J. B.," at p. 274 of the *Builder* for April 6th, in introducing his novel suggestion? The bad habit of sticking on handles, used as certainly as any "Lord" or "Sir," grows upon people sadly:—

"In all debates where critics bear a part,
No one but nods, and talks of Jonson's art,
Of Shakspeare's nature, and of Cowley's wit," &c.

Yet even when you can call a man "the judicious Hooker," or "the vivid Froude;" or a building "the majestic St. Paul's," or "the elegant Travellers' Club," it is well at times to treat the reader to an omission of the appellation, sanctioned though it may be by usage. Further, "ugly," in its usual sense of "offensive," "deformed," "of very disagreeable aspect," seems not quite happy in this case. The bridge has of course marred the aspect of the street and of the neighbourhood: the railway so near upon the thoroughfare has all the effect of a Temple-bar of an extremely determined kind on the view up the hill, and in descending absolutely destroys the perspective. The proportion of height to width,—the headway being so small and the street fairly wide,—has never been pleasing in an opening of any kind. The necessity of making use of every inch of height has not allowed any show of constructive purpose in the soffit; the beams and filling-in have been kept rigorously to the same level.

It is from this pretty clear that, on general grounds, the bridge ought never to have existed; a remark that might be made of lots of other triumphs of science, did not one recognise the wisdom of silence in the face of imperious destiny (at any rate, the level of the line should have been at least 15 ft. higher). The greatest efforts and skill would be as likely to be productive of *perfect* grace or dignity, as they would be in a dance by an artist bound for the rope-trick, or in a State reception by a princess under the conditions that struck Apollodorus as uncomfortable for goddesses in Hadrian's Temple of Venus and Rome. But, the conditions taken for granted, the treatment of the bridge with bracketed sides may be pronounced ingenious and not ineffective; the open-work parapets introduce a satisfactory variety, and the design and execution of the ornamentation are certainly not contemptible. Of course no one would expect the iron images of the City wild beasts,—rampant after their manner,—to be more beautiful than is their wont.

All this amounts to wishing that buildings (and other things) shall be praised or blamed for their obvious and acknowledged defects, and not by rote or by epithets that are at best misfits.

The fountains in Trafalgar-squre are good standing instances of the force of habit,—being almost invariably described as "the ugly fountains." Mr. Helps has furnished what will be taken by the diligent antiquaries of posterity as the opinion of our own time about them: yet I doubt whether many people who have made a real examination would eagerly maintain its correctness. The fountains may be too small, the parts of the square may be out of scale (the Nelson column would ruin any *place* on this head), the water may be a little scanty, and may have been still scantier when they were christened; the reservoirs may have contained dirty water and have leaked enough to make their surroundings sloppier than lovers of monumental architecture looked for. But this ought not to have led men well out of the blues to denounce the artistic design of the fountains themselves.

Without indulging in all Mr. Walter Shandy's enthusiasm, perhaps one may be allowed to interpose so much on "that mysterious influence of naming which determines so much of mortal choice," inasmuch as often "the right word is a power and communicates its definiteness to our actions." (G. Eliot, Middlemarch, book iii.)

S. F. C.

MERCY FOR MASONS.

The bright sun has at last taken its place with a promise to last, bringing comfort to many. The exceptions I wish to name are the masons, whom you see working in the open with the full glare of the sun upon the white stone at which they labour, with the result, as one expressed himself, that when he "turned his head aside he could see nothing." And naturally so, the glare affecting the eyes. Why do they not work in the shade when possible? If not possible, why do they not wear coloured glasses, and so preserve the eyesight for future years? I should like to know the average of injured eyesights among masons in comparison with other trades. A light respirator also, I should imagine, could be contrived to preserve their lungs, which would lessen the number of deaths from consumption and asthma considerably. If a few were to start such appliances, and prove the beneficial results, rest assured the many would not be backward in resorting to a present remedy for the prevention of a future injury.

Y.

ADULT INDUSTRIAL SOCIETIES.

Sir,—May I be permitted to call attention, through your columns, to a section of the working community who, however willing to earn an honest livelihood, are unable to do so from the fact of their being brought up to an industry which has been superseded by the introduction of machinery, or which they cannot follow profitably from accident having deprived them of the means of so doing.

Some years ago a lady, well known for her deeds of practical charity, assisted those of her own sex who suffered from a similar cause. Will any gentleman come forward and help to provide an institution where men of *good character* may learn a new calling, earn enough to keep their homes together, and get together a few tools, if required, till proficient enough in the new form of work to be able to earn a decent living, and become more useful members of the community?

Boys in our reformatories, and convicts in our gaols, are taught some useful craft, to enable them to live honestly, if so minded. Give *honest* men, who equally deserve our care, the same chance of preventing themselves or their children drifting into such poverty as would tempt them to despair, to intemperance, and to crime.

J. J. A.

THE WESTWOOD TOMB, LITTLE HORKSLEY, COLCHESTER.

The building of which we give an illustration in our present number has recently been erected as a family mausoleum for Mr. Wm. Macandrew, J.P., of Westwood House, Colchester.

The octagon form adopted by the architects is based upon a simple quadrangle, so as to cover the actual ground at their disposal, having sufficient depth for a lower story, and carrying two ranges of shelving round the space at equal heights, the upper portion being broken up into an octagon, carrying an upper range of shelves, and the whole space being covered with stone vaulting, having moulded ribs at intersections. The floor is laid with encaustic tiles, with a monogram in the centre.

Externally, the Decorated style is adopted. The whole of the work was contracted for by Mr. McColla, of Victoria-street, Westminster, and all the art finishings were supplied by London workmen.

The stone used throughout was obtained from the Conflans quarry in France. The masonry and carving were executed by Birtchnell, of Clapham. The slate shelving was from Magnus, of Pimlico. The iron doors and fittings were supplied by Hobbs, Hart, & Co.; and the ornamental ironwork is from Hart, Peard, & Co.

The total cost was 600*l.*; and the works have been carried out under the direction of Messrs. W. G. Habershon & Pite, architects, of Bloomsbury-square.

Messrs. Habershon & Pite, Architects.

UNION BANK OF LONDON: CHARING CROSS BRANCH.

We illustrate in our present number the structure which has been erected at the corner of Spring-gardens, Charing-cross, as a branch-office of the Union Bank of London, from the designs and under the superintendence of Mr. Frederick W. Porter, architect. It is of considerable size. The length of the Charing-cross front (north) is 42 ft. 6 in.; the flank, in Spring-gardens (west), 73 ft.; and the back (south), 61 ft. The height, from pavement to the top of main cornice, is 50 ft. 6 in.; and from the main cornice to the top of roof, 17 ft. The clear height of the various stories is as follows:—Double basement, 16 ft.; bank, 17 ft. 6 in.; first floor, 12 ft.; second floor, 11 ft.; and third floor, 9 ft.

The columns, pilasters, dado, and pedestals of the ground story are of grey granite, from the De Lank quarries, near Bodmin. The columns and pilasters of the upper stories are of polished red granite. The whole of the columns and pilasters are monoliths, with the exception of the pilasters of the two upper stories, which are in two stones each. All the other masonry is of Portland stone. The clustered chimney-stacks at the angles of the building, also the terminal vases on the attic story, are of terra cotta.

All the balcony-railings, and the bank entrance-gates, are of wrought iron, executed by Mr. Winstanley. The latter are excellent specimens of ironwork, and received a premium from the Society of Arts. The curved roofs are covered with plates of embossed copper, from the manufactory of Messrs. Tyler.

Entering the building, we find that the bank-room is 47 ft. by 26 ft. 6 in., the manager's room adjoining, and separated from the latter by a glazed screen, is 17 ft. 6 in. by 17 ft. 6 in. The walls are lined with woodwork, in the form of pilasters, pedestals, &c., principally wainscot, with teak panels; the doors, window-frames, and bank fittings are of Spanish mahogany. On the same floor are also waiting-rooms, and private room for manager.

The ventilation of the bank-room is effected by means of a ventilating engine, worked by hydraulic power, placed in a small room over the bank entrance-lobby, with drawing the air through a perforated ornamental frieze below the cornice of the ceiling, while fresh air is supplied through openings under the counter, and other parts of the room.

There are two stories of strong rooms in the basement, having a total area of 3,660 ft. superficial. The intermediate floor is, to a great extent, formed of cast-iron perforated plates, resting on wrought-iron bearers, and the height from lowest floor to floor of bank, 18 ft. The remaining portions of the basement stories are used as porters' living-rooms, clerks' lavatories, and store-rooms.

The first, second, and third stories are divided into sets of apartments, each consisting of a sitting-room, bedroom, and bath-room; access to these is by an entrance in the south front next Spring-gardens.

The manager's apartments consist of rooms on the south or Spring-gardens side of the building. The wrought-iron tanks in the roof, holding 4,760 gallons, supply water to lift, ventilating engine, and baths. We have only to add, that the builders were Messrs. Perry & Co., Stratford, and the amount of their contract was 28,473*l.*

UNION BANK OF LONDON: CHARING CROSS BRANCH.—MR. FREDERICK W. PORTER, ARCHITECT.

SEVENOAKS WEALD CHURCH, KENT.

THIS church was re-opened on the 10th inst. by the Suffragan Bishop of Dover after enlargement by the addition of a new chancel and organ-chamber, from the designs of Mr. T. G. Jackson, of London.

The new building is of Kentish rag stone, with dressings of Tunbridge sandstone; the roofs of Baltic timber, covered with Penmoyle green slating. The window traceries are founded upon what is known as the Kentish type, of which the chancel at Chartham, near Canterbury, affords the finest instances.

The ceiling is polygonal in section, boarded below the rafters, and divided by moulded ribs into panels, which are decorated with an arabesque design in simple colours at the intersection of the ribs. The choir seats are of oak, with carved elbows and turned shafts of walnut wood, and their front book-boards, as well as the altar-rail, are carried on wrought ironwork parcel gilt.

The east window is filled with painted glass, which has been executed by Messrs. Powell, of Whitefriars, from the cartoons and under the superintendence of the architect. The general tone of the window is light, and the colouring restrained in tone; the arrangement consisting in a field of silvery glass painted *en grisaille*, across which a band of colour is formed by the figure subjects in medallions which occupy the central part of each light.

The central part of the chancel floor is laid with a rather elaborate mosaic pavement, executed by Messrs. Powell in their new opaque glass.

The contractor for the general work was Mr. Wiltshire, of Sevenoaks. The warming apparatus was supplied by Messrs. Fraser, of London; the floor tiling by Mr. Godwin, of Lugwardine; the wrought ironwork by Messrs. Gibson, of Stamford; the organ is now being built by Mr. Henry Willis, of London; the carving is by Messrs. Farmer & Brindley.

THE SAFETY OF SASH-FASTENERS.

As I left myself open to a challenge by a sentence in a former communication, I will not shrink from holding my own, while expressing thanks for each new bit of information that may come in the way. With all respect for Mr. Fletcher, I am forced to say that his communication, as far as it relates to my remarks, leaves the subject exactly where I left it.

Before making a few more observations on sash-fasteners and their safety, let me say that I spoke not as an amateur, but as one who had long practical experience of almost every form of sash construction and fastening throughout the three kingdoms, and in part of the Continent, and that the matter in discussion has engaged my attention for many years. I am, therefore, equally interested on behalf of the building profession with Mr. Fletcher in seeing some practical remedy applied, and will be ever anxious to assist in the endeavour.

In advocating rebated meeting-rails to sashes, I did not necessarily argue the adoption of either the spring fastener or the one in present use. I proposed the rebate as an additional security, no matter of what kind the fastener might be. Of course, if servants or others neglect to adjust the fastener on a sash, there can be no security in any form of sashes that work in halves like the present. Now, as to the objections to the rebate, which was intended by me for all new sashes, it does not need either a section or a model to see at a glance its action. Its sufficiency depends, as every architect and builder knows, on the thickness of the parting slip. It might be put as a little sum to a school-boy in this fashion:—"If the groove in the sash frame or the parting slip in that groove is ½ in., what will the breadth of the rebate be?" The answer is obvious. Surely, then, ½ in. or ⅜ in. rebate is quite sufficient when both sashes are well fitted and the fastener is tightened.

If it were even required to alter present made sashes, having a ⅜ in. parting slip, I see no difficulty in the way, though I do not advocate it as a rule. Yet it might be done with advantage to the windows in the lower stories of houses.

If the sashes were in good condition otherwise, all that would be required would be to plane off the present splay or hooking and joint and screw slips of hard wood to form the new rebates.

Mr. Fletcher must admit that with a rebate to the present ordinarily made sash, and the fastener tightened, the thief could not push back the catch with a pocket-knife, or a steel blade of any kind; but with the majority of the present sashes, there would be little difficulty indeed. He remarks that it is foreign to the subject to say that if the thief cannot get in he will resort to other modes, and he thinks that men would be afraid to carry drills, jemmies, centre-bits, diamonds, &c., and that the finding of them on their person would insure conviction. He seems to forget that there are dishonest carpenters, bricklayers, house-smiths, bell-hangers, plumbers, painters (Ishmaels of the trades), who, in carrying the above-named tools, would only be carrying the instruments of their craft, and that the finding of them in their possession by the police would not afford even circumstantial evidence of their guilty intentions. A CRAFTSMAN.

SIR,—Your correspondents in their letters seem to have overlooked three essential conditions required in a good sash-fastener,—

1st. To force the top sash up towards the head of the sash frame.

2nd. To force the bottom sash down towards the cill.

3rd. To draw the meeting rails together and prevent rattling during high winds.

"Craftsman's" screw fastener does only one of these, and I have had experience of many of this kind rendered useless by a coat or two of paint raising the bottom sash and lowering the top and causing the screw and nut not to meet.

I have given much attention to this subject and believe that nothing at present made equals the quadrant sash-fastener, and after many attempts and failures I believe I have at last succeeded in making an improved quadrant sash-fastener that will not only fulfil the conditions I have mentioned, but will also prove a safety and partially thief-proof one; but I feel convinced no sash-fastener will answer except it fulfils these conditions.

ROBERT PHILLIPS.

SITE FOR BARRACKS.

SIR,—It is possible that those who have the selection of sites for barracks may have omitted in their inspection one part of the Kent coast at present undefended except by troops from Dover or Canterbury,—namely, Romney.

In the early part of this century there were barracks at Tenterden, a town situated about seven miles from Appledore Station, on the South-Eastern Railway, through which runs the Military Canal from Hythe to Rye. Tenterden has many local advantages for troops, but Romney would, with the prospect of Dungeness Harbour, be an admirable spot for such a purpose. Some years ago, the War Office were willing to grant the Military Canal to a celebrated engineer for a railroad from Hythe to Rye, especially for the conveyance of troops.

Perhaps a word of suggestion at this moment may avail. A MAN OF KENT.

LORD DERBY ON SANITARY ADMINISTRATION.

NEARLY two years ago Lord Derby, whose family have for generations been large owners of land in the neighbourhood, laid the foundation-stone of an hospital in the borough of Bootle, which was recently only a suburb of Liverpool. Lord Derby gave a valuable site for the building, and contributed in money besides. The hospital is now complete, and has just been opened by Lord Derby, accompanied by the countess. The event was observed as a *fête* in Bootle, and after the opening ceremony the mayor entertained the earl and countess and a large party to lunch in the Bootle Town-hall, or Assembly-room. In the evening there was a *soirée* at the hospital. The customary formalities concluded,—

Lord Derby said: I congratulate the inhabitants of Bootle on the completion and opening of this hospital. We are, though not one of the smallest, yet one of the very youngest of English boroughs; but I hope we shall not be found behind our neighbours either in public spirit or in thoughtful care for the welfare of those on whose labour our prosperity depends. It is just a week since an eminent public man, speaking at Manchester on all the subjects of the day, referred to the sanitary question as that which lies at the bottom of all national well-being and greatness. Thirty years ago—perhaps even a dozen years ago—language of that kind from a political leader would have been thought eccentric and paradoxical; now it is accepted as a fair expression of the feelings and wants of the time. That is a remarkable change: let the credit of it be given where it is due. It is owing to the collective labour of many individuals, personally for the most part obscure, but who have worked in a spirit of unselfish devotion to a great and useful cause. I am not going into questions of sanitary legislation. But let me just observe this—that the conviction which sanitary knowledge brings with it as to the preventibility in general of disease is one of quite incalculable importance. Men are very slow to learn the extent to which their destinies are in their own power. They are apt to be astonished if you point out to them that nine-tenths of the calamities that have afflicted the human race are directly and obviously the work of men's own hands. They are inclined to confound that feeling which we all respect, that of cheerful acceptance of the inevitable, with that other kind of resignation to evils which are not inevitable, which is mostly laziness and apathy, and the prevalence of which is one of the most characteristic distinctions between the savage and the civilised man. And why do I say this? Because I am deeply convinced that no sanitary improvement worth the name will be effected, whatever acts you pass, or whatever powers you confer upon public officers, unless you can create a real and intelligent interest in the matter among the people at large. It is very comforting to those who have worked long years in this direction to hear how our governing men now talk, and how they are praised for it too!

WATER SUPPLY PIPES.

SIR,—Allow me to suggest to "Expertus" the only way I have found to keep water free from sewage gas; at the same time I keep the pipes empty to prevent them bursting, I do away with ball-taps, and prevent any pressure being put on the pipes after the water enters the house, and I reduce the waste of water to a minimum.

I have just finished the re-arranging of water supply to a large house, and have had the fittings fitted up as follows:—The service-pipe enters the kitchen from water company's main and passes through an apparatus (which forms a kitchen trough), and has a tap attached to the supply-pipe above the apparatus for kitchen use; the pipe then passes up into the upper cistern (without ball-tap), and after filling the cistern the overflow water runs down the waste-pipe and supplies the cisterns at lower levels; when the lowest cistern is full, one quart of water runs down its waste-pipe into the apparatus, which shuts off the supply to the upper cistern. The water is procured by lifting a lever (which cannot be tied open). This apparatus does not require any attention as it is constantly in use, it being a kitchen trough, and the tap over attached to the supply-pipe. By not using ball-taps there is no pressure on the pipes after passing the apparatus. When the apparatus is shut off the water passes out of the pipes above it, whereby they become empty; therefore the frost will not burst them. In summer time this escapement can be shut off.

I think this is a good system and should be generally adopted. CHARLES PINN, Architect.

SALTING OF PARIAN.

I SHOULD be obliged if some of your readers would suggest an explanation and remedy for a very serious case of walls saltpetreing. My walls are principally built with Portland cement, floated out with Portland and sand, and set with Parian. When finished about a week we claircoled and distempered on some and painted on other parts, when at once began the most universal process of saltpetreing I ever saw; the greater part of distemper and paint are thrown off, and in places the effervescence stands out three-eighths of an inch.

The sand was partly Thames and partly a very sharp pit sand dug on the premises. J. S.

FALL OF STAND.

SIR,—With reference to the notice you make in last week's issue of your paper about the falling of a stand to witness the laying of the memorial-stone at a new chape Kentish-town, allow us to say it was not the platform which we erected for that purpose, but an ordinary scaffold used by the bricklayers which fell, upon which a very heavy crowd stood, and insisted upon standing on after many repeated requests and cautions not to do so; and as the whole of the arrangements were entirely out of our hands for the admission of visitors on the works and platform for the occasion, we do not consider ourselves to blame, and trust to your usual fairness to give this as public a position as you have the report, that the matter may be fairly represented. The architect superintending the works, also the clerk of works, consider there is no blame attached to us. NIBLETT & SON, Builders.

STRIKES IN GERMANY.

FOR some time past the workmen have been at war with their masters in Berlin and other German towns. The Prussian correspondent of the *Times* has given some interesting details of the existing state of things. He says in their origin the strikes were not unjustifiable. Even upon the assumption that the former rate of wages was satisfactory, the workmen had a right to demand an increase. Seeing that rent and provisions had become so much dearer, why should not manual labour, too? It is admitted on all hands that the cost of living at Berlin has been doubled for large strata of the middle classes in the last six or seven years, and increased 60 or 70 per cent. even for the poor. It is nearly, though not quite, the same thing in other considerable towns. Who, then, can blame

the workmen for advancing a claim that their pay, which was certainly never excessive, should at least keep pace with what was exacted for house-rent and eatables?

The strikes began by the working-men asking for an increase of wages of 25 per cent. and a reduction of hours from twelve to ten? When they obtained their terms, peace was re-established; when they had to give in, the attack was resumed a little later, and, in many cases, with better success. The result of the entire campaign is a general rise of the price of labour by 25 per cent. in a single year.

The strike of the Berlin masons began in the June of last year, and went on for six weeks. The workmen demanded an increase of their daily wages from 2s. 3d. to 3s., a reduction of hours from twelve to ten, and extra pay of 5d. for each hour overtime. Upon this 300 builders of Berlin formed a counter association, which negatived the programme of the working men *in toto*. Negotiations were repeatedly resumed, but as often broken off, both parties remaining firm. At last the masters gave in upon the condition that their defeat should be concealed under some concessions of a merely formal nature. Since then the workmen have been giving their services for something like eleven hours at 3s. 6d. per day.

An even vaster operation was the joiners' strike, which broke out after that of the masons had been settled, and lasted nine weeks. Of the 8,000 joiners in the city, 5,000 struck; 2,000 went off elsewhere; while 1,000 married people, with large families, remained stanch to their work. The claims put forth were similar to those of the masons,—25 per cent. more wages, and a reduction of time to nine hours and a half. The masters, who in Berlin number no less than 1,000, with 300 wealthy contractors among them, answered these demands by the counter proposition that piecework, which had not been very general, should be made universal, after which they hoped to be able to allow higher wages. After the expiration of seven weeks, those masters who had taken contract work for builders, and who, owing to the steady increase of house-rent, were enabled to accord higher wages, began to relent. Thus an opening was made for a compromise, by which the weekly wages, formerly at from 15s. to 21s., were raised to from 21s. to 25s., the number of hours remaining the same. Piecework under the new conditions yields from 30s. to 36s. per week.

A TECHNICAL DICTIONARY.

Sir,—"Rabbett, *n.*, a corruption of the word rebate." Such is the decision of the editors of the last edition of Webster's Dictionary, and, as far as I can judge, that decision is accepted.

I have long felt with your correspondent the want of a trustworthy technical dictionary of the Arts and Sciences, and I am taking every opportunity to prepare such a work; but I trust some one with more ability and more leisure will outrun me. The art dictionaries we now have are very confusing and overstocked with words of use only to the antiquary. I think if half these words were omitted, and their place occupied with the every-day terms of the studio, architect's office, and workshop, a really useful work would be the result.

George Alfred Rogers.

LONDON WATER SUPPLY.

In the House of Commons, in reference to Professor Frankland's report, already quoted in the *Builder*, and in reply to Mr. Kay-Shuttleworth, Mr. C. Fortescue said,—Major Bolton, the water-examiner of the Board of Trade, agreed with the Royal Commission on the Supply of Water to the Metropolis in thinking that Thames water, if only properly filtered, was harmless, and formed a fit and proper supply for the use of London. That gentleman also said that during the last winter two of the companies referred to had supplied water not properly filtered; the cause of that failure being that they were at the time carrying on large works for the purpose of improving their establishments, and also owing to the heavy floods. During that time, from want of sufficient storage room, the filtration was carried on hurriedly, and the water supply was by no means what it ought to have been. Major Bolton also reported that those companies were engaged in enlarging their works in a way which, in his opinion, would remove those evils, and would meet the requirements of the case, by making large additions to the reservoirs. If it should prove that this was not the case, it would be necessary for the Board of Trade to interfere. With respect to the last part of the question, he meant to insure, so far as the Board of Trade powers extended, careful filtration of the water supplied by those and other companies. Remedial measures were being taken, and he did not think that legal proceedings need arise at present.

HEALTHY HOUSES.

This was the title of the paper by Councillor Gowans read at the last meeting of the Edinburgh Architectural Association. The reader commenced by stating that the kind of houses we lived in was of such vital importance, not only to ourselves individually, but to the community at large, that he did not think it necessary to make any apology for introducing the subject of his paper. As he believed it was quite possible to design and construct houses so that those who lived in them might not suffer either morally or physically, he would state what, he thought, were the faults of our present mode of arrangement and construction, and what ought to be the chief requirements of a healthy home. In speaking of what he considered necessary to keep suburban dwellings from contaminating influences, he said that the subsoil upon which the house rested should be thoroughly drained to such a depth as would secure a crust of dry soil upon which to erect the structure. The walls below the floor level, as well as the space between, should be covered over with some substance to prevent that capillary attraction which the walls of the building and the internal heat of the rooms after the house is occupied exert upon anything which would supply moisture. The external walls of the building should be of such a thickness as would allow of a house being kept at an even temperature. Gables with fireplaces could not be too thick, as thin walls, especially at the chimney-head, were sure to produce smoky vents. Bedrooms and kitchens should be of the largest dimensions compatible with the size of the structure. No drains should be allowed to pass under a building, and he held that an architect knew little of his profession if he was driven by the arrangement of his plans to carry them there. Drains should never be allowed to pass further into a house than half the thickness of the outer wall, and if such were the law, he believed much less disease would exist in the city. He did not wonder at people getting into bad health, or having their constitutions so deteriorated and made liable to the attacks of every epidemic, when he considered that most of the pretentious houses in the suburbs of the city had drains passing underneath them. Such drains, from their faulty construction, permitted the sewerage to soak the base of the building, and render it a hotbed for the generation of disease. If drains were kept outside of buildings, he held that it was quite possible to trap them so that no bad air from the main sewers could find its way into the house. He knew that the trap generally in use was not effective for this purpose, but he had himself devised a double trap which completely secured the desired end. As to the cisterns of houses, he considered they should be placed where they could be easily reached, and where they would be free from contamination of any kind. He would have a room in the house, with plenty of light, entirely devoted to the main cistern of the building—a place into which the occupant could go as freely as into any open part of his dwelling, and where he could observe that such an important element as water was pure and wholesome. There should be no limit to the number of windows, and the position of the rooms in regard to light should guide the architect in fixing the fronts of his building. He considered that a great mistake was made by the builders of detached villas in making the entrance to the dwelling through the principal front of the house. This arrangement, of course, could not be avoided in street houses, but in suburban villas an architect had no excuse for adopting such a course. Mr. Gowans then went on to refer to street buildings. He objected to the main drains being allowed to run along the centre of the streets, because, as the kitchens, sculleries, and water-closets were generally at the back of the buildings, it naturally followed that the drain passed under the house before it could reach the main sewer. The only cure for this state of matters, he felt, was to have the sewer running along the back of the building, and the clean water in the front. He spoke against the system of having water-closets in the centre of buildings, and maintained that more than enough of water could not be had in order to keep drains pure.

SCHOOL-BUILDING NEWS.

Manchester.—The Bradford Memorial Schools were opened on the 1st inst. They are Gothic, simple in detail, with lofty belfry to principal roof. The chief school is 80 ft. by 35 ft., with two class-rooms, each 20 ft. by 16 ft. Separate entrances are provided, with lavatories adjoining. The site is inclosed with wrought-iron railing. The whole of the works have been executed by Messrs. R. Neill & Sons, builders, at an outlay of 1,600*l.*, under the superintendence of Mr. John Lowe, architect, Manchester.

Chorlton-upon-Medlock (Manchester). — St. Paul's schools, which stand in Higher Temple-street adjoining the church, were opened on the 9th instant. The lower story was erected a few years ago, and the additions which have just been finished complete the building. It now comprises a large room (64 ft. by 30 ft.) on each floor, and five class-rooms, besides the usual offices for boys, girls, and infants, and boiler-room and other arrangements required for tea parties. The rooms are fitted up with desks and galleries, are warmed by means of open fire-places and Haden's heating apparatus, and are provided with means of ventilation. The roof of the upper room is open to the collar-beam, and the woodwork of this and other parts of the building is stained and varnished. Access is provided to the upper floor by means of two stone staircases. The building is of brick, faced externally with white headers, and with stone dressings to doors, windows, and other openings. The gable end in Higher Temple-street has the large windows of the upper floor filled in with stone plate tracery, while the apex of the gable coping is finished with a wrought-iron finial. The elevation to Frances-street is agreeably broken up by three gablets, the centre one of which also has a wrought-iron finial. The building has been erected from the design of Mr. John Lowe, architect, Manchester, by Messrs. Davies & Maudsley; the present additions costing about 1,700*l.*

York.—St. Lawrence and New Fulford Mission Schools have been opened. The schools occupy a position in the suburbs, on a plot of ground immediately in rear of the church of St. Lawrence, and comprise a boys' school, 45 ft. by 20 ft.; girls', 50 ft. by 20 ft.; and infants', 50 ft. by 24 ft. There are also two class-rooms and out-offices, and the building has three separate entrances. The structure is of red bricks with stone dressings, surmounted by a spiral bell-tower. It is roofed with patent self-locking tiles from Hornsea. There is a high-pitched open roof, boarded; the rooms are well-ventilated and lighted, fitted with gas, and heated with Curney's stove. The boys' school is divided from that of the girls' by an arch of stone corbels with granite shafts; and each of the schools has been erected and fitted up in accordance with the rules of the Committee of Council on Education. On the side of the schools facing the church is a Gothic window, and the only separation from the churchyard is a light palisading. The entrances to the schools are from the lane leading from Lawrence-street to Heslington-road. The playgrounds are spacious and asphalted, and are enclosed by low walls and palisading. The cost of the schools has been upwards of 2,260*l.* The feoffees of the parish gave the site. Mr. C. T. Newstead, of York, was the architect. Mr. J. Brown had the general contract, the various works required having been executed under his superintendence by the following firms:—Mr. Warin Taylor, brick and stone work; Mr. G. Bailey, mason's work; Messrs. Hodgson, plumbing and glazing; Mr. Armitt, painting.

Sheffield.—St. Silas's new schools have been opened. The new building adjoins the existing school. Its exterior is remarkably plain. The building is in the shape of the letter L, and consists of a boys' and girls' school, each capable of accommodating 300 scholars. In addition to these large rooms, there are four for class purposes. The old school-room will now be used as an infant school, and it will afford accommodation for 350 children.

Parkgate.—On the 9th inst. the foundation-stone was laid by Lady Gertrude Foljambe of new Church of England Schools, at Parkgate,

near Rotherham. They consist of large mixed school, with class-room; and infants' school, also with class-room attached. They will accommodate a little over 400 children, and the cost will be about 1,200*l*. The material will be stone from the local quarries. The style is Early English. Messrs. Tacon & Rawson are the architects.

St. Briavels.—A new school has been opened here. It is intended also to erect a master's residence, making the total outlay 850*l*. The site was given by the late Mr. Peel, of Aylesmore, and the architect is Mr. W. T. Allen, of London, the vicar's son, who has given his services, and the builder is Mr. Meredith, Gloucester. There is a turret with spire. Accommodation has been provided for 170 children, with a class-room for sixty infants.

Cheadle.—The foundation stone of a new Wesleyan Sunday School, in Charles-street, has been laid. The building will be of brick, with stone dressings, its dimensions being 61 ft. by 32 ft. inside. The cost of the site and the building will be about 1,000*l*. The architect is Mr. Wm. Sugden, of Leek, and the builders are Messrs. Collis & Waugh, of Cheadle.

Hulme.—The new schools recently erected in connexion with St. George's Church, Hulme, and which are situate in Arundel-street, Chester-road, have been opened by the Bishop of Manchester. The schools will accommodate about 1,100 scholars, and have been built by Messrs. S. & J. Higham, contractors, Cheetham, from plans and designs prepared by the architect, Mr. Ernest Bates, of Manchester, and are in the Gothic style of architecture. There are separate rooms for boys, girls, and infants, and attached to each are a class-room, and room for hats and cloaks. The principal room is 81½ ft. long and 32 ft. wide, and is fairly ventilated and well lighted, and has two large traceried windows. The rooms are lofty. The principal entrance to the boys' school is in Ellesmere-street, to the girls' school in Cawdor-street, and to the infants' school in Arundel-street. The entire length in Ellesmere-street and Cawdor-street, is 73 yards, and in Arundel-street 20 yards. The cost of the building has been 4,500*l*., towards which sum 1,000*l*. have been contributed by Lord Egerton. The site was given by the Bridgewater trustees.

Wakefield. — The new Wesleyan Sunday School buildings are designed by Mr. William Watson, of Wakefield, architect, and are intended to be built of brick, with stone dressings. They consist, on the ground-floor, of principal entrance facing South-parade, with spacious staircase; the large room, 71 ft. long, 33 ft. wide, and 20 ft. high; and a class-room, 14 ft. by 13 ft. On the first floor are planned a school-room, 33 ft. by 31 ft., and 15 ft. high; five class-rooms, each averaging 14 ft. by 13 ft. In the basement are arranged the heating apparatus-room, kitchen fitted with boilers, &c., and other conveniences; from this floor, on the level of Graham's-terrace, is an entrance and staircase to the large room. On the ground and first floor are proper water-closets, lavatories, &c. The contracts for the various works amount to 1,481*l*., and the contractors are Mr. George Fawcett (who is also contractor for the restoration of the parish church), for the brick and stone work; Mr. C. F. Rycroft, slating work; Mr. Charles Driver, plastering work; Messrs. Craven & Lloyd, carpenter and joiners' work; Mr. W. Woodhead, plumbing and glazing work; Mr. S. Kirk, ironwork; Mr. C. Turner, and Messrs. G. Blake & Co., of Coventry, for the heating apparatus, which is on the hygrometric hot-air system. The memorial stone of the new building was laid last week.

Dukinfield (*near Manchester*).—The foundation-stone of St. Mary's Schools was laid on March 30th. Accommodation is provided for 200 children. Mr. Colbeck, Ashton-under-Lyne, is builder; and Mr. Edmund Kirby, of Liverpool, architect.

Stratford.—On Wednesday, new National Schools, which are situated in the densest part of Stratford, were opened by Mr. N. Powell, J.P. They are capable of accommodating over 900 children, and consist of boys', girls', and infant schools. Mr. W. F. Meakin is the architect, and Mr. James Rivett the builder. The cost of their erection has been 4,383*l*. Mrs. T. Curtis gave the freehold, the value of which is estimated at 1,000*l*.

Rawtenstall.—The corner-stone of a church school for the district of Constablee has been laid. The school is to be a stone building, in the Gothic style of architecture. The principal room will be 81 ft. in length by 26 ft. in breadth. Besides this there will be two class-rooms, each 15 ft. by 16 ft., with cellars underneath for heating apparatus, &c. The school will accommodate upwards of 300 children. The plans are by Mr. B. W. Jackson, of Halifax. The site is given by Mr. Taylor, who is also the largest contributor to the building fund.

Cheshunt.—The new girls' and infants' national schools, Church Fields, have been opened by the Bishop of Rochester. Mr. Barker, of London, was the architect, and Mr. Bentley, of Waltham Abbey, the contractor. The site was presented by the Rev. Alfred Preston, formerly curate of Cheshunt. The cost of the schools was 1,250*l*., which sum was raised by voluntary subscription. The porch was the gift by legacy of Miss R. Preston, sister of the founder of the schools. The structure is intended for the accommodation of about 250 girls and infants.

Kilnhurst.—A new school in connexion with the parish church of Kilnhurst has been opened. The plans were prepared by Mr. Blackmoor, architect, of Rotherham, and the building has been erected by Mr. Simmonds, of Kilnhurst.

Handborough.—Handborough schools, now re-opened, have recently been very much enlarged, so as to meet the Government requirements. This has been effected through the liberality of various voluntary subscribers interested in the work. The additions to the schools were made in accordance with a plan furnished by Mr. Wilkinson, of Oxford, and have been carried out by Messrs. Merry & Mansell, of Handborough.

CHURCH-BUILDING NEWS.

Hull.—The plans of Messrs. Adams & Kelly, of Leeds, architects, have been selected, after a competition, for the erection of a new church in Holderness-road, to be dedicated to St. Andrew. The church will cost about 5,000*l*.

Folkestone.—The committee for repewing the parish church, with Messrs. Stallwood (the architects), received the following tenders for re-pewing the church, erecting a new porch, and for the enlargement of the vestry:—Dunk, 1,072*l*.; Webster, 948*l*. 2s. 10d.; Holdom, 919*l*. 19s.; Bowley, 825*l*. 10s. It was agreed to accept the lowest tender. Some discussion took place as to reflooring the church with Minton tiles, for which a separate estimate had been given by the builders. Mr. Stock said that he objected to having the stones in the church removed, many of which contained inscriptions, to be replaced by a gaudy pavement. Mr. Woodward said it was not the intention of the committee to do this at present, although he wished it could be done, and the work be finished at once. The secretary said they had 220*l*. in hand, and altogether 350*l*., and the vicar stated that by Easter they would have 600*l*.,—enough to commence with.

Bristol.—The little old-fashioned church in Dowry-square, used as a chapel-of-ease to Clifton parish church, is in such a sad state of dilapidation that it has been determined to take it down and rebuild it in a style more convenient and more in harmony with modern usages. All the available material of the present building will be employed in the construction of a church capable of seating 500. The old-fashioned high-backed pews will give place to open seats of pitch pine. The building will consist of a nave, side aisles, and chancel, with a tower at the south-west corner. It is proposed to divide the nave into four bays, with moulded arches, labels, and carved terminals, the last of which will extend into the chancel, and will be filled in with wrought-iron screens. The column nearest the chancel will have a carved foliated cap, from which will spring the chancel arch. The reredos will be of marble and other stone. There will be no east window, the building at that end extending to the adjoining houses, and in its place there will be a recess immediately over the reredos, filled in with geometrical tracery, and upon the panels will be painted the Lord's Prayer, the Creed, and the Ten Commandments. The outside of the building will probably be of freestone and Pennant, and the internal columns will be of blue Pennant. The church will be paved with encaustic tiles. The total cost is estimated at about 2,000*l*., of which a considerable portion has yet to be raised. We understand that the work will be commenced soon after Easter.——The foundation stone of St. Nathaniel's Church, which is intended to meet the wants of the population of that part of Cotham near Lovers'-walk, has been laid. The foundations of the edifice are already laid, at a cost of nearly 900*l*. The church, which is intended to accommodate 700 persons, will be in the Early Gothic style, the chief material being Pennant stone, with freestone dressings. The roof will be open-timbered, and covered with slate. There will be a tower and spire, 150 ft. high to the vane, at the south-east corner of the church; and the principal entrance will be on the south, or Elm Grove-road, side of the building. Under the tower will be vestries for the clergy and choir. The chancel will be octagonal, and have a boarded roof; and on its north side will be an organ-chamber. The seats will be of red deal, stained and varnished; and the building will be warmed by one of Haden's heating apparatus. Messrs. Wilkins are the builders; Mr. Bevan is the architect. Between 3,000*l*. and 4,000*l*. have been raised towards the cost of the building.

Ruabon.—The parish church of Ruabon has been re-opened after restoration. The organ, upwards of a century old, built by Snatchley, and originally the gift of the Wynnstay family, has been entirely remodelled by Messrs. Gray & Davison, of London, at the cost of Sir W. W. Wynn, bart., M.P., who also, at his own expense, repaired and considerably beautified the chancel, and besides has subscribed the greater portion of the sum raised for the whole of the works. The restoration has altered the appearance of the interior. An entirely new roof has been put up, the stone pillars which supported the arches between the nave and side aisles have been replaced by others of a lighter character, and the pews have given way to open sittings, free and unappropriated. The gallery at the west end is to be replaced by a smaller one. The whole of the works, which, in addition to those mentioned, include others of a minor character, have been carried out by Mr. Wm. Williams, of Bangor, under the superintendence of Mr. Ferrey, of London, architect.

Illingworth.—St. Mary's Church has been closed for some months to undergo a restoration internally. In the re-arrangement of the seats, the architect has found it necessary to re-plan the area, to fit the purposes of the modern style of service, the centre aisle remaining as at present, but the side aisles will be placed immediately against the walls, thus bringing the congregation together to form two masses. The whole of the seats will be open and free, the ends and rails being in pitch pine, and the rest in deal. The organ will be placed at the south side of the communion, with the singers' stalls in oak on the north and south sides of the altar-steps. The pulpit will be placed in front of the altar-steps, at the south corner. The west gallery will be entirely filled with children's seats, and will give accommodation for about 145. The north gallery will remain as at present, except that the high doors will be taken away. The oak fronts to the galleries will be cleaned from paint and varnish, and left in their natural state. An increase will be made in the accommodation by this renovation for 37 adults and 40 children, in addition to 250 sittings which will be made available for the use of the rapidly-increasing population. The estimated cost is about 600*l*. Mr. J. Henry Wadsworth, of Halifax, is the architect; and the various artificers' works are let to the following contractors:—Masons' work, Mr. W. Farrar, of Holdsworth; joiners' work, Mr. T. Plant, of Halifax; plumbers' work, Mr. J. Holdsworth, of Halifax; painters' work, Mr. J. Hodgson, of Queensbury; and Messrs. W. & S. Thornton, of Huddersfield, will supply the heating apparatus.

Armley. — The foundation-stone of a new church, to be dedicated to St. Bartholomew, has been laid at Armley. The old church known by that name will give place to the new edifice. The site of the new church borders on the churchyard. The designs of the building have been prepared by Messrs. Walker & Athron, architects, Leeds. Its proportions will be considerably larger than the existing church. The estimated cost is 15,000*l*., and already subscriptions amounting to 9,600*l*. have either been received or promised. Mr. S. E. Wilson has contributed towards the building fund 5,000*l*. The plan of the building is that of a Latin cross, consisting of nave, six bays in length, transepts, and sanctuary, with roofs of equal height, and a tower at the intersection. The nave has aisles, north and south, with porches opposite the westernmost bays of the nave arcade; and the vestry is placed in the angle formed by the junction of the sanctuary with the south transept. The sanctuary is a dal, and the tower is surmounted by a sadd ack roof; and both

sanctuary and the space under the tower are intended to be vaulted. The church is to be built of local sandstone, and faced internally with limestone from the Ancaster quarries. The design is Early English, and its symmetrical proportions and simplicity of detail, combined with the size and solidity of the structure, forcibly remind one of the architecture of our Yorkshire abbeys. The principal dimensions are as follows:—Length of church, 157 ft.; width across transepts, 65 ft.; length of nave, 98 ft. 6 in.; width of nave, 30 ft.; width of transepts and sanctuary, 27 ft.; height to wall-plate, 46 ft. 6 in.; ditto to ridge of roof, 73 ft.; ditto to summit of tower, 153 ft. The contractors are,—Mr. H. Brumby, mason; Mr. J. Hall Thorp, joiner and carpenter; Mr. W. B. Myers, plumber; Messrs. Nelson & Sons, ironfounders; Mr. Ezra Walker, painter; Mr. R. Branton, plasterer.

DISSENTING CHURCH-BUILDING NEWS.

Colnbrook, near Windsor.—A new chapel, with vestry and schoolroom adjoining, has recently been erected in this town for the Baptist denomination. The building is of the Corinthian style of architecture, with a red brick front and white stone dressings to windows, &c., the whole being executed at a cost of about 800*l*. The internal arrangements are the same as usually adopted in modern places of worship, comprising three rows of seats, with gallery immediately over the entrance, the whole being stained and varnished. The warming apparatus, on the hot-air principle, was executed by Mr. Harris, of Thame. Mr. Daniel Singer was the contractor, the brickwork and masonry being executed by Mr. Henry Mole. The work was superintended by Mr. James Wells, of Thame.

Penistone.—Mr. John Rhodes, of Penistone, has sold to the Wesleyan congregation a plot of land, upon which it is proposed to erect a new chapel, with school-room, class-room, &c., underneath, and minister's vestry, organ-gallery, &c., at a cost of 1,000*l*., exclusive of cost of site. The building will be in the Gothic style of architecture, from designs prepared by Mr. Moxon, of Barnsley. Accommodation will be provided in the chapel for 400 persons, and in the schoolroom for 200 scholars. It will be in the midst of a population of about 2,000 persons, and in the immediate vicinity of the extensive steel and iron works of Messrs. Charles Cammell & Co.

Hollingworth.—The foundation-stone of a new Congregational chapel and school at Hollingworth, near Hadfield, Cheshire, has been laid. The new edifice will be in the Gothic style of architecture, built of stone obtained from Millbrook quarry, and faced with Dunford Bridge parpoints. There will be a tower, with buttressed angles, and slated spire. The total height is 86 ft. The chapel will be lighted at the sides by pointed three-light windows, and the bays will be marked by buttresses between the windows. The total length of the chapel, measured in the centre, exclusive of the entrance, will be 62 ft. 6 in.; the width, 40 ft.; the height, from floor to ceiling, will be 36 ft. The chapel will accommodate about 500 people. The school will be under the chapel, of the same size, the floor on a level with the ground, and 14 ft. high. There will be six class-rooms, three at each end. The walls will be plastered inside, and the school will be lighted by three three-light windows on each side. The schools will accommodate about 600 children. The buildings will be warmed by means of hot air or hot water. The site will be enclosed by stone walls, with gates at the front and side entrance. Mr. Henry Pinchbeck, of Manchester, is the architect; and Messrs. Higham Brothers are the contractors.

Tunstall.—The memorial stones of the new Wesleyan Chapel, Harriseahead, have been laid. The site of the building is in a central and public position. The style is Gothic, and the materials to be used are red bricks, relieved by bands and voussoirs of blue and white bricks. The plan of the chapel, which will accommodate about 380 persons, is that of a parallelogram, 45 ft. by 35 ft. internally, and is approached from the front through a porch, 6 ft. wide, and inner vestibules. At the rear of the chapel, behind the pulpit platform, will be the orchestra, with a class-room underneath. The principal front of the building has a three-light window, the heads of which are to be filled up with tracery. The central part of the front is to be finished with buttresses on each angle, with stone terminals rising somewhat above the roof. On each side of the central front gable will be the two circular vestibules, terminating with roofs at a somewhat lower level than the other part of the front. Each side of the chapel is divided into four bays by buttresses, with a two-light window in each bay. The ground-floor of the chapel, and the gallery across the entrance end, will be fitted up with open benches, and a number will be free. The woodwork, internally, will be partly of pitch pine, and the whole will be stained and varnished. The designs are by Mr. G. B. Ford, architect, Burslem, and are being carried out by Mr. Samuel Booth, builder, Kidsgrove. The cost of the building, exclusive of land, will be about 1,300*l*.

Finchingfield.—The Congregational chapel at Finchingfield, which has undergone extensive alterations and improvements, has been reopened. The works carried out in the restoration and improvement of the building comprise the following, viz.,—Reflooring and reseating with benches of stained and varnished deal throughout the ground floor and gallery. A platform, containing pulpit and deacons' seat, has been constructed at the end of the chapel, with a door on each side of the pulpit to the minister's and deacons' vestries, the end of the building being relieved with a large arched recess. The gallery-front has been lowered, and new windows and doors have replaced the old throughout the building. An external loggia, the entire width of the chapel, has been erected in front, forming two lobbies to the body of the building below, and containing a staircase on each side to the gallery above. The chapel has been heated by means of hot-water circulating-pipes. The walls, ceiling, &c., are distempered and painted in plain colours. The works, which have cost a sum of over 500*l*., have been carried out by Messrs. Cole, builders, of Thaxted, under the direction of Mr. C. Pertwee, architect, Chelmsford.

Fenton.—The memorial-stone of a new Wesleyan chapel at Fenton has been laid. The style adopted is Italian. The materials to be used are red bricks, with bricks of other colours sparingly introduced for relief, and Hollington stone dressings. The accommodation in the chapel will be for about 700 persons, and a portion of the sittings will be free. At the rear of the chapel will be a class-room and a minister's vestry. The central portion of the front gable will contain the two entrance-doorways and a five-light window, with traceried head. The interior woodwork will be of pitch-pine and red deal, stained and varnished. The building is to be warmed by hot air, and the front of the site is to be enclosed with iron railing and gates, with stone piers. Mr. G. B. Ford, of Burslem, is the architect; and Mr. T. Newbon, of Longton, the builder. The amount of the contract is 2,100*l*., exclusive of lighting and heating, and the total outlay will be about 2,350*l*.

Books Received.

The Elementary Education Act, 1870 (33 & 34 *Vict.*, c. 75), *and Elementary Education (Elections) Act*, 1871; *with Introduction, Notes, and Index.* By Hugh Owen, Jun., of the Middle Temple, Barrister-at-Law. And an Appendix. Seventh Edition. London: Knight & Co., Fleet-street.

The present edition of this work contains, in addition to the several orders of the Educational Department as to applications for and the elections of School Boards, the new code as to Parliamentary grants, the general order of the Poor-Law Board, and the instructions of the Education Department as to the accounts of School Boards, suggestions as to the planning and fitting up of schools, &c. The accuracy and utility of the work are testified by the number of editions through which it has already passed.

Transactions of the Indian Engineers' Association; for the half-year ending June, 1871. Vol I. Calcutta: Printed by H. C. Gangooly & Co., 23-24, Mangoe-lane.

This interesting association, which seems to have been started entirely by native engineers, was established on a permanent basis in January, 1871. It regularly holds monthly meetings, and the present volume contains interesting and able papers by native Indians on various subjects, and in good English, such as On the Laterites of the District of Bancoorah, by Baboo Jodu Nath Roy; Notes on Brick-making, by Baboo Khetter Mohun Bose; on the Temple of Juggernauth, by Baboo Radhica Prosaud Mookerjee; a Brief History of the Steam-engine, by Baboo Madhub Chunder Roy (one of the three secretaries, all natives); Memoranda on Macadamising Roads in the Province of Bengal, by Baboo Jodunath Roy. There are also an Appendix containing extracts from Professional Papers, and several plates, besides some business-like observations on the objects of the Association, and on the proceedings, by Baboo M. C. Roy, hon. sec.; besides whom there are the two other secretaries, Baboo Nilmony Mitter, and Baboo Deno Nath, sen. The president and vice-presidents are not yet elected.

VARIORUM.

The economy of heating greenhouses by means of gas has been more than questioned by some of our correspondents. It would of course depend to some extent on the mode adopted. A writer in *The Garden* says on the subject:—"Wherever gas is to be had at a reasonable price I am convinced that it is much more economical to heat a greenhouse with it than with an ordinary boiler; and where a large greenhouse is in question it will pay any one well to make his own gas. Outside a room, 17 ft. by 10 ft., and 10 ft. high, I have a small conservatory, 7 ft. by 3 ft., just covering the opening of the window, which has been taken entirely out. Round this little greenhouse runs a 1½ in. iron pipe, communicating with a copper boiler outside on the leads. This boiler is broad and shallow, and during the last two winters I have maintained a temperature of 50 degrees, without any fire in the room, by merely lighting the gas under the boiler from eight o'clock at night until the same hour the next morning. Of course the boiler is sheltered from wind and rain. The burner, which is one of those known as a 'roarer,' is 5 in. high, and shaped like the chimney of an ordinary paraffine lamp, rising up through a globe. The gas enters the gaspipe and passes to the globular part of the burner, where the pipe is closed, except at an orifice considerably smaller than an ordinary sized pin's head. Through this hole the gas rushes upwards towards the tube or chimney, and before entering it becomes completely mixed with air in its passage through the central opening. On applying a light at the top of the chimney, the mixed gas and air unite to form an almost colourless flame, which emits intense heat, accompanied by a 'roaring' noise, which, however, paradoxical as it may appear, is very slight." If owners of greenhouses were to place the heating pipes so that they could be regularly blackleaded, they would find a saving in fuel of at least fifteen per cent., after all expenses attending the process were paid.——"Building Societies and Borrowers," by C. D. A. Friedlein, offers refutations of principles on which permanent building societies have been worked; illustrates the mutual interest and security which borrowers, investing members, and depositors should have in building societies; and the extortionate rate of interest paid by borrowers in building societies worked upon unsound principles. Its tone is shown by the circumstance that on its first appearance an injunction in Chancery was asked for against its publication, but it was refused. Some of the building societies certainly want looking into.——Binding together the little "Shilling" books, by Mr. Edward Walford, Mr. Hardwicke has issued a most compact "Peerage, Baronetage, Knightage, and House of Commons." It makes little more than a pocket volume, and is wonderfully comprehensive.

Miscellanea.

Opening of a New Cattle-Market at Leicester.—A new cattle-market has been laid out on nearly twenty acres of land and opened in the south-western suburbs of Leicester, at a cost to the corporation of something like 30,000*l*. It is laid out in the most improved manner, and comprises not only an area of several acres for horse-fairs, but also ten slaughter-houses, in two blocks, for cattle, two for pigs, and one for condemned animals; besides offices and houses for the clerk and other officers connected with the market. The slaughter-houses are connected with the main line of the Midland Railway by a short branch line; while close to the market the Midland Company have, at a cost of about 10,000*l*., constructed cattle-docks, from which cattle have easy access to the market, and *vice versâ*.

The Prosperity of Berlin.—Writing under this head, the correspondent of the *Manchester Guardian* at Berlin says:—"Joint-stock companies are springing up daily like mushrooms, and for every conceivable branch of industry. Mines, railway stock, breweries, gutta-percha, new streets and new suburbs, sewing-machines, chemical works, &c., offer a wide field for the choice of investors. . . . The Berlin Exchange, one of the largest and handsomest in Europe, is no longer nearly big enough for the immense increase of business, and is to receive considerable additions. . . . . In the neighbourhood of Französisch Buchholtz, a few miles from Berlin, a handsome carriage stops before the door of a milkwoman's cottage, and a gentleman asks if she is the owner of the plot of ground. The woman is rather taken aback, and before she can answer, the stranger continues: 'Will you take 10,000 thalers for it?' Had he offered 500 she would probably have closed at once; but the liberality of the offer made her hesitate. 'I must first consult my son in Berlin,' was accordingly the reply. The son, who keeps a beer-shop, is consulted, and says, 'Mother, I smell a rat. You may get twice the sum if you stick out for it.' The next day the gentleman offers 20,000 thalers. 'Well,' says the woman, 'I must consult my son once more.' The son shakes his head more wisely than before, and advises his mother to refer the intended purchaser to himself. Next day he says to the applicant, 'Ah, sir, you have come just too late. I sold the land to a company yesterday for 50,000 thalers to build a manufactory on, and am to sign the agreement to-morrow.' 'But if I give you 60,000 thalers, what then?' 'Why, then, of course you have the preference.' The bargain was struck at once."

Accident at the New Colonial Offices.—Mr. Bedford has held an inquest at Westminster Hospital on the body of Patrick Collins, aged 46, a labourer employed at the extensive range of buildings now being erected in King-street, Westminster, for the new Colonial Offices. Michael Mahony, a labourer, said that on the 8th inst. he was working with the deceased at the new Colonial Offices. They, with other labourers, were employed in moving scaffold-poles across a wall from one side to the other. They were standing on the top of the brick wall, which was 14 in. wide, and 75 ft. in height from the ground. The work had been finished, and the scaffolds taken away, all but a few of the poles and putlogs, which they were then removing. The deceased, who was standing on the top of the wall, was in the act of handing a pole across, when his foot slipped, and he became giddy, and fell off the wall on to the ground below, striking his head in his descent against one of the putlogs. He fell more than 75 ft. Deceased and other men complained of the work being dangerous. The jury, after some deliberation, returned a verdict of accidental death, but added their opinion that the manager of the works should take precautions to prevent accidents amongst the workmen.

House Property.—At a recent sale of house property by Mr. F. Godwin, at the Auction Mart, Lothbury, the following prices were amongst those realised:—No. 107, Fulham-road, held for an unexpired term of 34 years at 15*l.* ground rent, 575*l.*; No. 8, Brompton-square, held for an unexpired term of 48 years at 7*l.* 10s. ground-rent, 770*l.*; No. 9, Brompton-square, held for an unexpired term of 48 years at 7*l.* 10s. ground-rent, 750*l.*; 54, Brompton-square, and 2, Cheval-place, held for an unexpired term of 48 years at 7*l.* ground-rent, 900*l.*; 16, Exeter-street, Chelsea, held for 1½ year at 4*l.* 5s. ground-rent, 135*l.*; 12, Motcomb-street, held for an unexpired term of 29 years at 7*l.* ground-rent, 1,180*l.*; No. 13, Motcomb-street, held for an unexpired term of 51 years free of ground-rent, 1,620*l.*; No. 14, Motcomb-street, held for an unexpired term of 33 years free of ground-rent, 1,260*l.*; No. 18, Wilton-place, Belgrave-square, held for an unexpired term of 50 years at 6*l.* 6s. ground-rent, and let for 15 years at 140*l.* per annum, 2,600*l.*

The South Kensington Museum.—A public meeting was held at Westbourne Hall, Paddington, in furtherance of a movement for the opening of the South Kensington Museum on Sundays. Resolutions were adopted to the effect that a petition to Parliament be submitted, praying for the opening of the Museum on Sundays, and appointing a deputation, who have since waited on Earl de Grey and Ripon and the Right Hon. W. E. Forster.

The Restoration of Croft Church.—A consistory court, says the *Darlington Times*, has been held in the parish church, at Croft, before the Right Hon. T. E. Headlam, M.P. for Newcastle, chancellor of the diocese of Ripon, to consider an application made by the Rev. Frederick Henry Law, Rector of Croft, for a faculty authorising them to take down and entirely remove the chancel of the church and vestry on the north side thereof, and the pews and sittings and other erections now in the chancel, and also the pulpit and lectern, and to rebuild and restore the said chancel and vestry, and to replace therein the pulpit, lectern, pews, and sittings, and for other purposes set forth in the citation. At the conclusion of the inquiry, the chancellor said the church ought to be restored throughout, as well as the chancel. The great difficulty was that the clergyman had submitted a clear and definite plan, while the opposition had no counter scheme to present. He thought it exceedingly desirable that the parishioners should put into a clear, definite shape what they proposed to do; therefore he proposed to delay the issue of the faculty to give them time to apply to the court, and he thought it would be wise on the part of the rector to make considerable concessions; and the court might then adjudicate. It was finally resolved that the faculty should take effect in three months, with this condition. Mr. Street and Mr. Fowler have respectively reported on the state of the church, and in favour of the rector's views.

The late Rev. W. H. Black.—We mention with exceeding great regret the death, on the 12th inst., of a remarkable man, the Rev. W. H. Black, F.S.A., the Palæographer of the British Archæological Association. Mr. Black died at Mill-yard, Goodman's-fields, the place of his pastorate, at the age of sixty-two (according to the *Times* obituary: we should have thought him older), and will be buried at Abney Park Cemetery, on (this) Friday, the 19th, at half-past two o'clock. We have often had occasion to speak of his rare skill in rapidly mastering the contents of ancient documents, and conveying the pith of them in a popular form to a mixed audience. He was equally genial and erudite.

London Institution.—At a *conversazione*, on the 17th inst., a lecture "On Colour," by Mr. F. S. Barff, was delivered. It treated of,—Fallacies respecting colour—Chemical illustrations—Composition of the sulphide of mercury; action of heat upon it; action of friction on the volatilised sulphide—Changes produced by heat in certain metallic iodides, and in crystals of cobalt and copper salts—Structure of the eye; comparison of its functions with those of some other organs of sense—Pure colour—Colours viewed by different coloured lights—Illustrations with the electric light—The Spectrum—Absorption of portions of white light—The three primitive colours—Methods of testing the purity of pigments by the prism—and Fluorescence.

Fall of a Girder on the Midland Railway.—On Tuesday last, Benjamin Gamin died in the infirmary of St. Pancras Workhouse from the effects of an accident which took place by the falling, or, as it is alleged, the breaking of an iron girder on the Midland Railway. The deceased and other workmen were employed on Monday afternoon in removing a girder for some improvements which were being effected at the bridge which crosses the Midland Railway at the Camden-road. They had just succeeded in swinging the iron girder, when, it is stated, it suddenly broke in three pieces, one of which, a heavy mass, fell upon the unfortunate man Gamin, crushing him in a frightful manner.

The Proposed Covered Cab-stand at Knightsbridge.—Shopkeepers of Knightsbridge and others have memorialised the Westminster District Board of Works against the endeavour,—first proposed in the *Builder*,—to improve poor cabby's hard position, by adding a cover to his stand, and enclosing a part of it as a waiting-room. The Board, however, had already given their consent, conditionally, to the proposal, and have sent a copy of the memorial to Colonel Henderson, of the police, whose plan it is.

Imperial Theatre, Newington Causeway. We are asked to say that the dimensions we gave as the size of stage, viz., width 30 ft. and height 40 ft., are the measurements of proscenium opening. The stage will be 67 ft. wide and 58 ft. high.

The Proposed New Fruit and Flower Market for the City.—The Markets Committee have reported to the Court of Common Council, recommending that the Farringdon Market should be reconstructed as proposed, at a cost not exceeding 150,000*l.* The rents, it is anticipated, will be increased from an average of 712*l.* a year to 9,592*l.*, and the tolls and casual lettings from 507*l.* to 4,000*l.* The Council have adopted the report, and given the committee authority to apply to Parliament for the requisite powers, and to raise the necessary sum.

Hucknall Church and Byron's Grave.—A correspondent of the *Notts Guardian* states that with the view of realising a monument worthy of Byron in Hucknall Church, where his remains and those of Ada lie, a sum of 2,150*l.* has already been subscribed towards the reparation and enlargement of the church itself, by residents in the locality, and that aid is now further wanted from the public to promote the objects in view. The plans for the restoration have been prepared by Messrs. Evans & Jolly, architects, Nottingham.

Fixed Indian Ink.—We have received from Mr. Laurence Cowen some fluid Indian ink, which has this advantage, amongst others, over ordinary Indian ink, that it will not move under colour; tint after tint may be applied without disturbing the lines. The somewhat ugly plan hitherto pursued of colouring at the back of tracing-cloth and paper may thus be superseded. It is claimed for the new material, too, that it will remain in a fluid state, and when in use does not turn ropy.

Recreation Ground at Deptford.—Mr. W. J. Evelyn has signified his willingness to allow the townspeople of Deptford to use six acres of ground for purposes of recreation, a nominal rent only being charged. The ground is to the west of Old Sayes Court Farm, and, as including the site of the house in which Peter the Great is said to have lived while learning the art of shipbuilding in this country, possesses historical interest.

The Ordnance Survey of London.—The report of the progress of the Ordnance survey for the past year has been issued. It states that the plans of London on the scale of 60 *in.* to a mile are now complete. They are drawn on 326 full-sized sheets of paper, and probably form the largest and most complete plan of a city ever produced. Of these plans, 144 sheets have been engraved and published, and the remainder are in progress.

Railways and Working-class Dwellings. An artizan opponent of the Mid-London Railway writes to complain that "nearly 200 families, chiefly of the labouring classes, are being turned out of their homes at a short notice," in the vicinity of the Holborn Viaduct, in order to make room for the new station of the London, Chatham, and Dover railway. He urges that families who are weekly tenants should receive compensation for being summarily ejected.

A Relic of Exeter House, Derby, has been advertised for sale. It consists of the entire lining of the "council chamber," which was wainscoted with dark oak from floor to ceiling, adorned with pilasters in the doorways and casements, and finished with heavy cornices. The wood, according to the local *Advertiser*, is in good condition.

Docks at Portishead.—A contemporary is informed that the whole of the capital required for the completion of the docks at Portishead has been subscribed, and refers to the fact as showing that the promoters of the scheme have the greatest confidence in the work they have undertaken. It appears that only 5,000*l.* of the entire sum have now to be made up.

Public Baths on the Thames.—Mr. Ayrton and the Thames Conservancy have, it appears, consented to the construction of a bath off Battersea Park; and the company which has undertaken the work intends fitting up another (provided, of course, with a filtering apparatus) close to the Embankment, between the Temple and Waterloo Bridge.

Monument in Dublin to the late Lord Mayo.—A meeting has been held in Dublin, for the purpose of making preparations to erect a monument to the late Lord Mayo.

Church at Winterton, near Brigg.—Complaints have reached us of the manner in which "restoration" is being carried on here without professional advice.

Sale of Sites in Northampton.—A number of freehold plots of building-ground, situate in the new street leading from the Town-hall to the new Northampton and Bedford Railway Station, have been sold. Lots 1 to 8 were sold at from 3s. to 3s. 8d. per foot by private contract. Lot 9 (14,620 ft.), was sold by auction, at 2s. 6d. per foot; lot 10 (1,080 ft.), at 4s. 6d. per foot; lot 11 (2,970 ft.), at 3s. 6d. per foot; lot 12 (2,200 ft.), at 4s. 6d. per foot; lot 13 (10,408 ft.), at 3s. 6d. per foot; and lot 14 (1,040 ft.), at 3s. 1d. per foot. Lots 11 to 14 are about the centre of the east side of the new street, between Angel-lane and St. John-street. Lot 9, the most extensive piece, and which was purchased by Mr. Pickering Phipps, runs from the New-street into St. John's-street on the west side. Lot 10, bought by Mr. John Collier, forms the opposite corner.

Practice makes Perfect.—Mr. Bessemer, giving evidence before a committee of the Society of Arts, the other day, said, I have observed the sleight of hand that men acquire in various mechanical arts where they have a certain thing to do, and that only; and it is really marvellous how, in three or four weeks, a man will do with ease what would have been pronounced an utter impossibility. Take, for example, the forging of steel. A man will take a bar of steel, which has to be forged into an octagon shape, and he will pass it under a heavy hammer, striking about 300 blows a minute, and will turn it exactly one-eighth of a revolution at each stroke, and the whole of the bar is forged with the greatest exactitude, though he has to alter the angle every 300th part of a minute.

New Roman Catholic Schools at South Stockton.—The foundation-stone of new schools to be dedicated to St. Patrick has been laid here on a piece of ground between Gilmore and Westbury streets, near Mandall-road. The schools will be built of plain red brick, the architects being Messrs. Goldie & Child, of London; the clerk of the works is Mr. Atkin, of Leeds; and the contractor for the whole of the work, Mr. J. F. Craggs. The building will accommodate 300 children; will cost about 800*l.*; and is expected to be finished in July.

The New Post-office, Chester.—At a recent meeting of the Town Council it was unanimously resolved, "That a communication be addressed to the proper Governmental department, expressing the hope of the council that the new post-office, proposed to be erected in St. John-street, may be so designed as to harmonise with the architectural features peculiar to the City."

The Severn Tunnel.—The Severn Tunnel Railway Bill empowers the Great Western Railway Company to provide and subscribe the whole of the spare capital of 750,000*l.* required for the undertaking. The opposition has been withdrawn, and the Bill will come before the chairman of Ways and Means as an unopposed Bill.

TENDERS

For mansion for Mr. R. Davies, M.P., at Treborth, Menai Bridge. Mr. R. G. Thomas, architect:—

William Williams	£12,995 0 0
Evan Williams	11,967 0 0
Roberts & Co.	11,035 0 0
Parry	11,024 0 0
Owen	9,326 0 0
John Williams	9,132 0 0
Thomas & Son	8,760 0 0
Rowlands (accepted)	8,230 0 0

For a farmhouse at Nether Exe, near Exeter, for Mr. C. Hill. Mr. J. T. Bressey, architect:—

Stephens & Son (accepted)	£1,860 0 0

For triple cottages and outbuildings at Noke Farm, near Islip, Oxon. Mr. James H. Money, architect:—

Manning, Brothers	£472 0 0
W. & J. Payne	425 0 0
Selby	408 0 0
Hatwell	401 9 0
Stone	395 0 0
Horne	394 0 0
Cruse	386 17 0
Morris	383 14 9
Walters	373 0 0
Long	373 0 0
Stevens & Pullin	355 0 0
Fathers (accepted)	291 10 0

For a brick wall and the setting back of fences, for the Windsor Local Board of Health:—

Goodchild	£212 0 0
Kelly	159 0 0
Hollis	149 18 0
Sturgess	149 15 0
Dalton	149 10 0
Reavell	146 0 0

For Hospital for Sick Children, Great Ormond-street. Mr. E. M. Barry, architect:—

Lucas, Brothers	£39,965 0 0
Trollope	39,634 0 0
Cubitt & Co.	38,900 0 0
Higgs	37,650 0 0
Foster	36,920 0 0
Booth	36,480 0 0
Smith & Co.	36,463 0 0
Holland & Hannen	36,223 0 0
Perry & Co. (accepted)	35,890 0 0

For rebuilding premises in Fenchurch-street. Mr. T. C. Clarke, architect. Quantities supplied by Mr. King:—

Hill, Keddell, & Waldram	£8,976 0 0
Brass	8,896 0 0
Coleman	8,753 0 0
Turner & Sons	8,734 0 0
Merritt & Ashby	8,652 0 0
Pritchard	8,619 0 0
Browne & Robinson	8,449 0 0
Myers & Sons	8,273 0 0
Newman & Mann	7,696 0 0

For villa residence, at Hill-lane, Southampton. Messrs. W. & J. Jurd, architects:—

Ware	£950 0 0
Brinton & Bone	930 0 0
Rowland & Laver	880 10 0
Stevens	876 0 0
Gambling	830 0 0
Lewis	814 0 0
Bunney	788 0 0
Martin & Son	730 0 0
Crook	729 0 0

For residence, shop, stores, and stables, at Millbrook, near Southampton. Messrs. W. & J. Jurd, architects:—

Toogood	£870 0 0
Kimber	829 10 0
Spicer	794 10 0
Rowland & Laver	776 0 0
Lewis	765 0 0
Crook	749 0 0
Martin	714 0 0

For villa residence at Mortlake, for Mr. C. Lee. Messrs. Pain & Clark, architects. Quantities supplied by Mr. E. Morfee:—

Henshaw	£1,230 0 0
Crab	1,198 0 0
Manley & Rogers	1,140 0 0
Cook & Green	1,109 0 0
Aries	1,090 0 0
Aviss & Co. (accepted)	1,029 0 0
Sawyer (too late)	1,019 0 0

For alterations at the Albemarle Hotel, Albemarle-street, Piccadilly. Mr. J. Crawley, architect. No quantities:—

Simpson & Son	£895 0 0
Reby	448 0 0
Paley	414 0 0
Nightingale	396 0 0
Bamsey	383 0 0
Emery	359 0 0
Carmody	349 0 0
Pickus	310 0 0

For new house, for Mr. H. Bigsby, at Todhurst Farm Pulborough, Sussex. Mr. Wells, architect:—

Humphrey	£1,116 0 0
Wady & Hammond	999 0 0
Longley	970 0 0
Dewdney	953 18 0
Terry	930 0 0
Robinson	918 7 6
Baker	892 14 0
Mason & Bristy	883 0 0
Puzey & Filewood (accepted)	820 0 0
Washington	675 0 0

For boundary-walls, to enclose surplus land at the Lambeth Union Workhouse, Kennington-lane. Messrs. R. Parris & T. W. Aldwinckle, architects:—

Whitehead	£1,055 0 0
Valks	1,049 0 0
Nightingale	977 0 0
Tyerman	898 0 0
Goff	898 0 0
Yates	893 0 0
Dover	875 10 0
Crockett	839 0 0
Prout	795 0 0

For villa residence at Bolton-le-Sands, near Lancaster, for William Jackson, M.D. Mr. Stephen Shaw, architect:—

Masons', Wallers', Excavators', and Drainers' Departments.

Hayton (accepted)	£436 0 0

Carpenter and Joiner's Department.

Parkinson (accepted)	£395 0 0

Plasterers' and Slaters' Departments.

Hartley (accepted)	£232 0 0

Plumbers', Painters', Glaziers', Gasfitters', and Bellhangers' Departments.

Abbott (accepted)	£126 10 0

For the extension of the Sewage Purification Works, Hertford. Mr. T. W. Grindle, engineer. Quantities supplied by Mr. Timmis:—

Moore	£2,735 0 0
Strickson	2,700 0 0
Norris	2,630 0 0
Potter	2,586 0 0
Bugbird	2,500 0 0
Ritson	2,470 0 0
Harris (accepted)	2,243 0 0

For the front portion of the Athenæum, Camden-road. Mr. F. R. Meeson, architect:—

Jackson & Shaw	£3,251 0 0
Henshaw	3,210 0 0
Newman & Mann	3,192 0 0
Scrivener & White	3,187 0 0
Kelly, Brothers	3,130 0 0
Mann	3,089 0 0
Perry	3,040 0 0
Manley & Rogers	2,997 0 0
Wood	2,897 0 0
Nightingale	2,790 0 0
Southcott & Co.	2,625 0 0
Gregory & Knight	2,550 0 0
Blease*	2,183 0 0

* Understood to be withdrawn.

For the interior of the Elephant and Castle Theatre of Varieties, in the New Kent-road. Messrs. Dean, Son, & Matthams, architects:—

Cooke & Groom	£3,500 0 0
Roy	3,259 0 0

For residence, coach-house, stable, and approaches, at Snaresbrook, Essex, for Mr. G. F. H. Clark. Mr. W. Powell, architect:—

Pavitt	£1,550 0 0
Thorpe	1,520 0 0
Hunt & Elkington	1,450 0 0
Cook & Groome	1,400 0 0
Leatherdale*	1,150 0 0

* Accepted, for residence only.

For stabling for eleven horses, coach-houses, and living-rooms above, for Lord Auckland, in Buckingham-row. Mr. W. S. Champion, architect. Quantities supplied by Messrs. Woodzell & Colcutt:—

Eunor	£1,449 0 0
Cooke & Green	1,313 0 0
Smith	1,287 0 0
Newman & Mann	1,265 0 0
Scrivener & White	1,254 0 0
Wagner (accepted)	1,120 0 0

For two houses and shops, at Leytonstone, Essex, for Mr. Cullen. Mr. J. W. Forge, architect:—

Cains	£1,450 0 0
Brown	1,250 0 0
Ingham	1,095 0 0

For repairs, painting, decorations, &c., to house at Herne-hill, Norwood, for Mr. Moss Isaacs. Mr. J. D. Hayton, architect:—

Pearce	£899 0 0
Blott	765 0 0
Maxwell	729 0 0
Deacon	685 0 0
Richards (accepted)	433 0 0

For enlarging the United Methodist Free Church, Mills-street, Vauxhall. Mr. S. J. Stedman, architect:—

Richards	£475 0 0
Keast	420 0 0
Mallett (accepted)	395 0 0

For additions to house, High-street, Battersea, for Mr. William Griffin:—

Baker (accepted)	£210 0 0

For warehouse and drying-shed, Russell-street, Bermondsey, for Messrs. Axtell & Co. Mr. G. Elkington, architect:—

Coleman	£1,080 0 0
Little	1,057 0 0
Deavin	1,0[illegible] 0 0
Preston (accepted)	[illegible] 0 0

For three warehouses in Fetter-lane, Holborn. Mr. W. S. Witherington, architect:—

Eaton & Chapman	£3,257 0 0
Mark	3,088 0 0
Little (too late)	3,075 0 0
Robbins & Co.	2,890 0 0
Elkington	2,850 0 0

For stabling, coach-house, &c., Kendall's-mews, Portman-square, for Mr. J. Taylor. Mr. W. S. Witherington, architect:—

Mark	£317 0 0
Brown	298 0 0
Eaton & Chapman	290 0 0
Cole	285 0 0
Bamford	275 0 0
Little	235 0 0

Offices, Ludgate Circus.—Messrs. Perry & Co.'s tender for Messrs. Cook & Sons' offices at Ludgate-circus, as reduced, has been accepted at 14,000*l.*

No. 7, Bucklersbury.—Mr. G. S. Pritchard says his name should be added to the list given by us, and that his tender, 1,793*l.*, has been accepted.

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We are compelled to decline pointing out books and giving addresses.

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II. THOMAS CARLYLE.
III. TRADE WITH CHINA.
IV. MILTON.
V. MODERN SCEPTICISM—THE DUKE OF SOMERSET.
VI. THE BRITISH PARLIAMENT, ITS HISTORY AND ELOQUENCE.
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II. THE ROYAL INSTITUTION.
III. GUIZOT'S MEMOIR OF THE DUKE DE BROGLIE.
IV. MR. MIALL ON DISESTABLISHMENT.
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WANTED, by a thoroughly practical and energetic Man, a RE-ENGAGEMENT as GENERAL FOREMAN or CHARGE of JOB. Thoroughly versed in drawings, setting out or measuring up any description of work, and good management of workmen. Carpenter and joiner. Aged 37. Reference from present employer.—Address, S. I. Post Office, Ashford, Middlesex.

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SITUATION WANTED, in a BUILDER'S OFFICE, by a Young Man, aged 19, five years' experience. Good references.—Address, J. S. care of Mr. Powell, 1, Carrington-street, Mayfair, W.

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A BUSINESS-MAN, CARPENTER, thorough knowledge of all branches, SEEKS a SITUATION, as FOREMAN. Used to heavy works, machinery, quarrying, &c. Lately been building a school. Would take labour, or go abroad.—Address, A. B. care of Mr. W. Ellis, 17, Bridge-terrace, Harrow-road, Paddington, W.

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A PLUMBER, accustomed to good work, new or jobbing, is in want of a SITUATION; is also a good gas and hot-water fitter and zinc-worker. Can give good references for sobriety and skill. Age 38.—Address, W. M. 14, Lonsdale-road, Westbourne-grove, Bayswater, W.

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A THOROUGHLY practical, energetic, and persevering Man, Joiner by trade, is open to an ENGAGEMENT as GENERAL FOREMAN or CLERK of WORKS, in town or country. First-class reference. Well up in church work.—Address, A. B. 15, Davies-street, Berkeley-square, W.

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CONTRACTS *Continued from p. ii.*

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TO CONTRACTORS.—Builders wishing to TENDER for the ERECTION of the PROPOSED HOWELL HARRIS MEMORIAL CHAPEL, Trevecca College, South Wales, can see the plans at the College, and at my Office, on and after MONDAY, APRIL 15th, between the hours of TEN a.m. and FOUR p.m. Tenders properly endorsed to be sent in to the Rev. W. HOWELLS, Principal, Trevecca College, Tregarth, on or before SATURDAY, MAY 4th. The Committee do not bind themselves to accept the or any other Tender. Should the Committee desire, the builde Tender may be accepted will have to provide sureties.

R. G. THOMAS, Architect, &c. Menai Brid.

April 11th, 1872.

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The Builder.

VOL. XXX.—No. 1525.

The Mid-London Railway: Traffic of the Streets.

THE important project of providing railway communication through London in the direction of its greatest dimensions from east to west, is not, in the current session of Parliament, a novelty. In 1866 a scheme, the same in its essential features, was brought into Parliament, but rejected on the motion for the second reading, without inquiry into the merits of the Bill. The "inner circle," still far from completion, and not likely, indeed, ever to be completed, was then in course of construction, and it was thought desirable that further progress should be made with the works of the underground line, and that additional instalments of that system of communication should be opened to the public, before any other schemes of a similar character should receive Parliamentary sanction. The Mid-London Bill was not rejected, as has been said, on its merits, which were not inquired into.

The Mid-London railway scheme now before the public fares differently; it raises questions of vast importance as affecting removal of buildings, disturbance of business, displacement of dwellings, and especially as it may affect street traffic, railway connexions, facilities for locomotion, and the convenience of the population in its movements, in contradistinction to what may be called stationary local interests. In this session, Parliament in its wisdom has ruled that the merits and details of the project of a Mid-London railway are fit subjects for scrutiny and inquiry before a select committee, and the number, variety, and magnitude of the interests involved in the inquiry, combine to make the contest one of the most protracted and costly that Parliament has to deal with. It is certain that in the present session the Mid-London inquiry will prove the great contest of the session.

It may only be necessary to recall here the principal features of this scheme. The project is prosecuted by two Bills, the Mid-London Railway and the Mid-London Railway (Western Section). Taking the two schemes together, they are for a line of railway which will commence at Willesden Junction in the west, and will proceed in a direction nearly parallel with the Edgware-road to the Marble Arch, and from thence in a direction not far from the line of Oxford-street and Holborn to Coleman-street, and eastwards to Mile-end Old Town. The scheme embraces the formation of a new street from the angle of Giltspur-street and Newgate-street to the junction of Commercial-street, Commercial-road, and Whitechapel High-street. The proposed railways would be about nine miles in length and the estimated expenditure 4,766,616*l.*, including 1,400,000*l.* appropriated to the cost in part of making the new street. The line would have connexions, or exchange-stations, with numerous important railways.

This remarkable case was opened on the 15th of April in the Committee on Group 1 of Railway Bills, over which Mr. J. A. Hardcastle, member for Bury St. Edmunds, presides. Mr. Rodwell, Q.C., opened the case for the promoters in an able address that lasted for nearly three hours. He detailed fully the particulars as to the direction of the line, the localities of the proposed stations, the estimates, and the multifarious public advantages calculated to accrue from the execution of the scheme. With Mr. Rodwell were Mr. Serjeant Sargood, the Hon. Mr. Thesiger, Mr. Gorst, and Mr. Kingsford. Mr. H. Toogood is agent for the Bill. The promoters have to face above sixty adverse petitions, many of them from powerful and influential associations, firms, and individuals. The former classes include,—the Metropolitan Board of Works, the Lord Mayor, Aldermen, and Corporation of the City of London, the Commissioners of Sewers of the City of London, the Governors of Christ's Hospital, the Governors of St. Bartholomew's Hospital, the Hon. Society of Gray's Inn, the Metropolitan Railway Company, the Metropolitan and St. John's-wood Railway Company, the Ecclesiastical Commissioners for England, the Marquis of Westminster, Lord Portman, John Neal, Daniel Neal, Lucy Fogg, and other unknown petitioners; with petitions from a large number of vestries, district boards of works, firms, owners, and occupiers. The array of counsel against the Bill is very formidable, and embraces Messrs. Venables, Q.C., Cripps, Q.C., Round, Q.C., Clerk, Q.C., Sir Mordaunt Wells, Q.C., with about a dozen of other Queen's Counsellors and juniors.

Much of the evidence given in this *cause célèbre* is of a very interesting character. Mr. Wm. Casey, a traffic-taker, gave evidence that on the 28th March last, in Cheapside, from 8 a.m. to 12 midnight, 9,032 vehicles passed a given point, and 80,257 passengers, on foot or in omnibuses and private carriages. At the Post-office end of Newgate-street, the number of vehicles was 9,322, and of passengers 64,212. The traffic was taken at twelve stations on or near the line of the proposed railway. In Oxford-street, near Tottenham-court-road, the number of vehicles was 8,803, and of passengers 62,110. In the same thoroughfare, near Regent-circus, the number of vehicles was 9,361, and of passengers 68,872. The witness stated that it had been ascertained that 853 omnibuses passed along Oxford-street in each direction, east and west, daily. The proportions of vehicles of various kinds, and of passengers and their modes of conveyance, varied considerably at the different points of observation. For the sixteen hours, from 8 a.m. to 12 p.m., the numbers in Cheapside, near Old Jewry, were:—Omnibuses, 2,604; cabs, 3,477; four-wheeled wagons, 1,438; two-wheeled carts, 1,104; private carriages, four wheels, 326; private carriages, two wheels, 83. Passengers on foot, 54,677; in omnibuses, 21,247; in cabs, 3,307; in private carriages, 1,022; equestrians, 4.

Mr. Forbes, Managing Director of the London, Chatham, and Dover, and Metropolitan District Railways, gave very decided testimony in favour of the proposed railway, as calculated to afford great accommodation to the public, and to furnish important facilities to the passengers by other lines of railway with which it would be connected. The proposed line would provide facilities that could not be more effectively given by any other scheme that could be proposed. The traffic at Ludgate-hill Station amounted to about 8,000,000 of passengers a year, many of whom wished to get further on, in one direction or another, which they would be able to do by means of the proposed Mid-London line. The witness was of opinion that the Metropolitan Company was now very nearly at the limit of their capacity, in regard to the traffic between east and west, from King's-cross to Bishop's-road. The Chatham Company was under contract to run eighty trains each way per day in and out of Moorgate Station, and they had got to fifty-six a day. The Mid-London line, if made, would, he felt certain, accommodate a very large amount of traffic that at present could not be accommodated at all. It would be in communication with nine or ten of the terminal stations of large railway systems, from which it would at once collect traffic on the one hand, and deliver it on the other. The Mid-London line would have the advantage of a ready-made traffic, waiting to be carried, to enter upon at once.

Mr. Cawkwell, General Manager of the London and North-Western Railway, was called by the promoters, and stated his opinion that the line would give great accommodation to a part of London that is not at present supplied with railway communication. He believed the proposed line would very effectually relieve the streets of a large amount of traffic. Of 300,000 cabs leaving Euston Station, 237,685 were for destinations close to the line of the proposed railway.

Among other statements as to street traffic, made by Mr. Haywood, Engineer to the Commissioners of Sewers, and put in in tables, were the following:—Passengers by the Metropolitan District Railway in the seven months ending January 31st, 1872, 11,010,467; season tickets at twelve journeys per week, 203,449—total, 11,213,916. The Chatham and Dover passengers to Ludgate-hill in 1871 amounted to 8,951,595. Mr. Haywood gave evidence as to the street improvements that had been effected in the City of London during the last twenty-five years, amounting to more than 150 in number. He spoke also to the density of the population of different parts of London, and of the districts that would be accommodated by the proposed railway. St. Luke's contained a population of 159,909 to the square mile. The whole population of the City proper was 74,000. In the observations of street traffic made under directions, he had found that on different days in February last there passed in 12 hours a point in Oxford-street, between Tottenham Court-road and Regent-street, 8,236 carriages; near Great Turnstile, 10,560 carriages; at the Mansion House, east of the junction with Queen Victoria-street, 13,660 carriages. In Newgate-street, 33,000 foot-passengers passed a given point in twelve hours; and in the Poultry, before Queen Victoria-street was opened, the foot-passengers numbered 75,100 in twelve hours. Mr. Haywood spoke in strong terms of the accommodation that would be given by the proposed new street, and the relief that it would afford to the present thoroughfares east and west, that were now so inconveniently crowded with traffic.

It may give some idea of the importance and the probable costliness of this inquiry to state that the greater part of the first fortnight has been occupied with the statement of the promoters' case, and the examination and cross-examination of their witnesses. It must be admitted that they have shown a strong case; but the hearing of the other side may alter its complexion. In addition to the witnesses already mentioned, the promoters have called numerous representatives of large trading houses in the City, and near the proposed line of railway in other parts of London, all of whom have offered testimony in favour of the scheme.

The engineering evidence in support of the line has been given by Mr. J. Hawkshaw, engineer-in-chief, Mr. Falkiner, Mr. T. E. Harrison, and Mr. Jas. Fairie Blair.

The Marquis of Westminster opposes on public grounds, as we understand, because instead of running under Edgware-road, Oxford-street, and Holborn, the line will run behind those thoroughfares, displacing thousands of houses and persons, and especially of the working-classes. We sympathise with this view, and trust some means will be devised to prevent the threatened evils in that direction.

THE KNOT OF SANITARY LEGISLATION.

We have recently called attention to the details of the Public Health Bill, as introduced by the Government into Parliament; to the criticisms offered by some of the leading advocates of sanitary reform; and to the history of sanitary legislation. We have especially pointed out the great national importance of deciding on the unity of system which it is necessary to design and adopt, at a time when it is first proposed to control the course of the functions which have been hitherto performed mainly by the unaided operations of nature. It is yet necessary, in order to attain a comprehensive grasp of the subject, to consider the influence of the special or subsidiary Acts of Parliament, now existing, on the administration of sanitary law; and to refer to the mode in which the Sanitary Commission, appointed in 1869, has advised that the subject should be dealt with.

Fifteen Acts of Parliament, as we have before noticed, deal with sanitary enactments in general; under the distinct heads of facilitating local government, of preventing the spread of disease, of removal of nuisances, of utilisation of sewage, and of raising money for any of these purposes. London, Scotland, and Ireland are chiefly regulated by special Acts. But the Acts which have a direct, although subsidiary, relation to sanitary measures proper are so numerous that they can be conveniently cited by us only in categories or groups.

The first of these groups consists of the Burial Acts, of which there are eight, without counting the special clauses introduced into Acts, passed under some other title. The powers granted to the Privy Council, by the Metropolitan Interment Acts of 1850 and 1852, to close certain cemeteries, were a result of the reports of the Commission appointed in 1843, by Sir Robert Peel, to inquire into the state of large towns and populous districts. In 1853 this legislation was extended to the provinces. The general purport of these enactments was, to provide such sites and to enforce such provisions, with regard to burial, as should obviate the evil influence which neglect in this matter had been shown to exert on the health of this population.

Upwards of thirty Acts of Parliament have been passed in order to regulate the employment of children and young persons in factories and workshops. With these may be classed enactments referring to special trades or manufactures, such as those of the baker, the bleacher, and the printer. An Act for the Regulation of Mines is now under the consideration of Parliament. While these Acts may be considered, so far as their sanitary character is concerned, as chiefly intended to prevent the deterioration of race caused by the over-working of the young, they also include provisions as to cleanliness, ventilation, over-crowding, and similar matters, which come naturally under the review of medical inspection; but they more properly belong to the educational, than to the sanitary, branch of administration.

Two Acts of Parliament, dated in 1846 and 1848, give facilities for the establishment of public baths and wash-houses; and there are provisions respecting bathing, in the Towns' Police Clauses Act of 1847, which are incorporated in the Local Government Act of 1858.

The question of overcrowded and unhealthy dwellings is dealt with by half a dozen Acts of Parliament, including those clauses in the Public Health Act of 1848 which enforce the registration of common lodging-houses. Notice of any contagious disease occurring in any lodging-house is required by the Acts of 1851 and 1853. There are similar provisions, especially with reference to overcrowding, in the general Acts; so that consolidation and simplification of the law as to this branch of medical police is much required.

Another class of Acts has provoked a more persistent opposition than any other detail of modern reform from persons who would resent being stigmatised as the friends of disease, misery, and crime, but whose activity actually tends to the degradation and destruction of the people. We refer, of course, to the Vaccination Acts, which were consolidated in 1867, and to the Contagious Diseases Act of 1866. The further simplification of the provisions of the law in this matter, and the exercise of such a stringent measure as might and would effectually stamp out two of the greatest scourges of humanity in modern times,—diseases of only some three hundred years' standing, and communicable exclusively by contagion,—is much to be desired.

Another class of Acts of Parliament is perhaps less directly to be regarded as of a sanitary character, in the first instance, than either of the preceding. This consists of measures intended to prevent the fraudulent adulteration of food, and the unregulated sale of poison. In 1860 the Act 23 and 24 Vict., c. 84, facilitated the appointment of analysts, by whom any purchaser of food may, for a small payment, have any article of food analysed; and provided penalties for adulteration. It is to be regretted that an Act of so benevolent a scope, and one which applies to the whole United Kingdom, is not generally in operation. Under the Nuisances Removal Act of 1863, already referred to, powers are given for the entry on premises to inspect food, and to destroy it if unfit for use. The regulation of the sale of poisons is under the Pharmacy Act of 1868. A striking instance of the isolated and tentative mode in which sanitary legislation has been attempted is afforded by the Alkali Works Regulation Acts of 1863 and 1868, directing the Board of Trade to appoint an inspector of all such works, which must be registered for this purpose, and carried on in an innoxious manner. The pressing nature of the nuisances arising from this particular manufacture spurred the public to seek for this special protection. A train of smoke, charged with sulphurous gas, has been traced from the mouth of the lofty chimney of one of these works till it struck the ground at a distance of nine miles, scorching and withering the vegetation on which it alighted. This Act bears a close relation to the Smoke Acts, so called. The nuisance of smoke is dealt with both in general and in local Acts. The provisions of the Towns Improvement Clauses Act of 1847, for its prevention, are incorporated into the Local Government Act of 1858, by which a penalty of 40s. *per diem* is imposed on factories the chimneys of which are improperly constructed. The Sanitary Act of 1866 classes all chimneys that emit dense and opaque smoke as nuisances. Acts also exist to prevent nuisance from the smoke of steam-vessels and of railway locomotives. The consumption of coal by the latter class of machines would appear, however, to be practically unchecked.

Finally may be cited the Quarantine Act, of 6 George IV., c. 78, which is a special sanitary measure, enforced through the Privy Council. The Sanitary Act of 1866 adds to the conditions by which vessels come under the provisions as to quarantine. In the operation of this law there is a division of responsibility between two central administrative departments, and a further confusion, in many instances, between harbour authorities and local jurisdictions. This, again, is a portion of that branch of administration which might be properly styled medical police.

The Registration of Births and Deaths, under the statute of 6 and 7 William IV., c. 86, has been already mentioned, as rather a means of collecting information of a statistical character, valuable for its sanitary nature, than as a portion of sanitary legislation, properly so termed. Thus we find eight distinct groups of laws, one of them alone containing thirty Acts of Parliament, which, as special or subsidiary measures, form more or less important portions of our present Statute Law on the subject of the Public Health; in addition to the fifteen distinct Sanitary Acts above enumerated.

We have seen that the Commission of 1869 divided, in their second report, the subjects of local government into the two branches of police and of supply. The latter, again, they divided as eleemosynary, or, in point of fact, the Poor-law, with which they had no concern, and ordinary, or the public health. To rank sanitary legislation as a matter of ordinary supply, regulated by local government, is not a very admirable specimen of the art of classification. But let that pass, except in so far as a wrong title may often influence men to entertain a wrong conception of that which it describes. The Commission appear to have been admirers of that very easy, but often misleading, method of classification, which is familiar to logical students as dichotomising, or dividing in two, an artificial order of arrangement, long since abandoned by all serious thinkers. Passing this question of method, they speak of the duties of local government as being, in a wider sense, economical, and, in a more restricted one, sanitary. But they find no reason for the division of medical from engineering functions, nor for any distinction between the prevention of disease, or the removal of that which creates it, nor between the supply of wholesome air, water, and food, and the suppression of maladies caused by their unwholesomeness. In other words, the Commission have regarded the question of public health as a Medical Board may be supposed to do. They seem to have been unaware of the more accurate estimate of the subject which is formed by the practical publicist; and mainly or entirely ignorant of the great difficulties attendant on the engineering portion of the question, which is the very life of the matter.

Under these impressions they state local sanitary government to comprise eleven several heads. These are, the supply of water; the prevention of the pollution of water; the provision of sewers and utilisation of sewage; the regulation of streets, highways, and new buildings; the healthiness of dwellings; the removal of nuisances and refuse, and consumption of smoke; the inspection of food; the prevention of disease; burial arrangements; regulation of markets, &c.; public lighting of towns, &c.; and the registration of deaths and sickness. The result of following this view of the subject would be, that on the various and often most imperfectly informed vestries, town councils, and local Boards throughout the country, would be imposed the several distinct responsibilities which appertain to the sanitary engineer, the architect, and inspector of buildings, the medical inspector of health, the inspector of markets, of weights and of measures; the examiner of cemetery arrangements, the gas purveyor, and the Government registrar. To lump together these very different subjects is a species of consolidation which may be more properly termed confusion. We cannot wonder that Mr. Stansfeld should have demanded more time to consider the subject than would have sufficed for bringing in a Bill founded on so heterogeneous a plan. Sanitary legislation, pure and simple, is a matter of sufficient importance to have its boundary distinctly drawn. If, on the one hand, it is confused with the totally distinct subject of the reorganisation of the local administration of the country, and the determination of a new social unit, to replace the old order of Alfred the Great, which has now grown into decrepitude; and on the other hand it is sought, while omitting the engineer, to absorb the duties of the medical man, the architect, the policeman, and the public registrar, we shall find human life itself to be classed as an accident of sanitary legislation.

It is well for serious men to look this great subject boldly in the face. Two distinct principles are at issue. On the one hand the sanitary reformer, the medical reformer, the social science student, the Government, and, we may humbly add, ourselves—have one great object in view. It may be stated more or less mildly, more or less boldly. But it is not too much to say that it is this: To prevent the decimation, or yet further destruction, sooner or later, of the rapidly increasing population of this country, by a pestilence generated by the results of their own neglect.

Opposed to this aim is what we may call the pocket interest. We do not wish to throw a stone at any one; or to attribute to any local committee, vestryman, or other unit of local authority in the country, any unworthy motives. Still, we can be blind neither to facts nor to human nature. There can be no denial that the objection entertained by people to tax themselves, even for the worthiest purpose, is great; and that it has a tendency to make them shut their eyes to the necessity of any reform for which they have to pay. "A Pack of Doctors who want jobs." Such is the emphatic summary in which Farmer Clobshanks and Mister Cent-per-Cent will include the advocates of provisions for public health. To make way against this feeling is difficult. It is only by giving stringent power, whether legislative or administrative, to the sanitary reformer, that this dead weight can be set rolling.

Easy enough, no doubt, it would be to draw up a plan as nearly perfect as it is allotted to human theories to be. But here comes in the third difficulty. How will Parliament deal with it? The temper of assemblies like our two Houses must not be ruffled. Propossessions,—we will not call them prejudices,—must not be shocked. The minister may see clearly, not only what he wishes to do, but what, on the highest principles of statesmanship, ought to be done; but can he persuade the House of Commons to see with him?

It is on this view that we have, in our humble capacity, given to the measure now brought before Parliament an adherence which we might hardly have considered due to it on its own merits alone. The question of the consolidation of such a mass of confused legislation as we have shown to exist is not one that, according to precedent, is likely to be satisfactorily settled the first time it is brought before Parliament. Let any one look at the dates of the existing Acts, and see how enactment has been invariably followed by amendment. Ultimate, and even proximate, consolidation is the object, we believe, of all. But do not let us lose the present year in discussing a question that cannot be settled out of hand. To have to amend such a consolidating law the year after passing it would make us look ridiculous in the eyes of Europe.

We confess that, in our opinion, the main consolidation to which we look forward is the repeal, pure and simple, of the confused mass of laws above described; and, if a return to the principle of the common law on the subject,—that the committer of a nuisance can be compelled to abate it at his own cost (in which way Shakspeare's father seems to have been dealt with),—be impossible, at all events such a brief enactment as may be necessary to give force to that principle. All comes to that; and, we think, all might be said in comparatively few words.

But the real knot of the question is not this. Whether we go on for a few years more, building detail upon detail in our labyrinthine legislative structure; whether we pass a monster Act of 400 or more clauses out of hand, to amend and consolidate up to to-day; or whether such a briefer mode as we suggest should prove to be practicable, and not too shocking to legal legislation; or whether the Government Bill pass, *tel quel*; is not, after all, the most pressing question. The real knot of the matter lies in the administration. Under any circumstances, how are we to reconcile efficiency and local autonomy? How are we to insure that autonomic activity, if produced, shall do good, and not harm? We call on local authorities to act. We leave their hands, if not absolutely untied, yet at liberty to experiment to a great extent. In the course of these experiments, if carried out with all despatch, energy, and honesty, shall we not do at least as much mischief as good? And may not the mischief be irreparable, and the good lingering? So numerous, for instance, are the schemes for the utilisation of sewage, that a barrister has just published what he calls a handbook on the subject; which is, in fact, little more than an index to some half a dozen reports of Royal Commissions, and one from the engineer of a particular undertaking. Are we to say to the local authorities, the question is so large, so important, and requires such high faculties for its successful treatment, that—we remit it to the wisdom of the vestry?

The President of the Local Government Board will have, if his Act pass, the same duty to perform in his department that the Secretary of State for war has to carry out in his own. He has to grapple with the two giant evils of poverty and disease; and we believe that he looks them resolutely in the face. On the organisation of administrative sanitary measures depends far more than on the words printed in the Statute-Book. Hitherto no one has spoken distinctly on this part of the subject. Fairly considered, it is the key to the whole. Let us, then, direct the attention of those who think and work with us rather to the administrative, than to the legislative, side of the question. Failing excellence in the former, the latter, even if it could be at once rendered perfect, would be as uninfluential as are some of those excellent laws which we have above mentioned. Sanitary administration is the knot of the sanitary question. How is it to be cut? We look to the Government to propose the reply.

LAND AND RAILWAYS IN THE CITY OF LONDON.

SIR,—At a time when railways are covering the land, and the cry is "still they come," a Londoner feels perplexed as he contemplates the probability of his premises being required for some new line of railway, and generally a state of uncertainty exists among men as to fixing the locality of a business, as from the operation of a new line old and populous thoroughfares will be deserted, and the streams of traffic diverted into new channels. Take Broad-street, for instance, at present the terminus of so many lines of railway, that for so many years was seclusion itself, the home of merchants, who required quietness to study their great commercial speculations, the effect of which was a colossal fortune or irretrievable ruin. This street is now all bustle and excitement,—vehicles and foot-passengers passing backwards and forwards. Moorgate, Farringdon-street, London, Chatham, and Dover Railway-stations; the District Railway, in Cannon-street, and soon the Mid-London, from Kilburn to the Marble Arch, along Oxford-street, to a terminus in Newgate-street, and similar scenes of bustle and noise will occur in these respective localities. My object in making these prefatory remarks is to draw attention to the evident wish of the railway companies to pass through the City of London, and it must be admitted that this is an important question, and requires careful consideration.

While on this subject I will allude to what must be considered an error on the part of the shrewd citizens of London, in reference to the waste lands within the City, a considerable amount of interest having to be paid annually on the purchase-money of this unproductive land. No doubt the reply will be that the City surveyor has not received any offers from any enterprising builder or other person for the surplus land in question; or if an offer has been made, it has been of too low an amount to be entertained. Now, in order to arrive at an impartial judgment, the market value of the land will inflexibly be the guide. I will take, for instance, the surplus land in connexion with Farringdon-street and its neighbourhood. The Holborn Viaduct, although a great public improvement, inasmuch as it reduces the labour of horses and the toiling pedestrian, also depreciates the value of the vacant land, because it takes the traffic away from the lower ground on to the higher level of the Viaduct, and therefore no shopkeeper could expect to prosper located on a spot deserted by the public, and consequently land thus situated will be covered by buildings devoted to manufacturing or other useful purposes, where it is not necessary to have shop-windows teeming with a display of fancy goods; and although the land would be valuable, a less price must be expected for it than if situated in a more attractive spot.

As this letter is devoted to City affairs, there is one that particularly demands instant attention. I believe it is a fact very well known, that the Farringdon-street Vegetable Market has proved a failure, involving a large annual pecuniary loss to the City treasury; but, notwithstanding this, in consequence of a reported misunderstanding of the fruit and flower dealers of Covent Garden Market, with the Duke of Bedford, their landlord, and an expectation that these tradesmen would leave Covent Garden Market and settle in Farringdon Market, a very expensive plan has been made by the City Surveyor, said to amount to more than 100,000*l.*, to accommodate these tradesmen; but it now turns out that the duke has come to terms with his tenants, and they have resolved to remain where they are. Fortunately this altered state of things has become known in sufficient time to warn the City authorities to hold their hand and withdraw from the contemplated unprofitable expenditure on an unsuccessful market.

RICHARD WHITTINGTON.

THE FEVER OUTBREAK AT BURBAGE, LEICESTERSHIRE.

IT is now about fourteen years ago since any epidemical outbreak occurred in this village, whose population numbers less than 2,000 persons, until recently, although autumnal diarrhœa appears to have been prevalent for many years. Burbage forms part of the parish of Aston Flamville, one of the constituents of the Hinckley Union, and is situated on the Warwickshire border of Leicestershire. It presents the usual straggling form, stretching about half a mile along the Hinckley road, commencing at about a mile from that town; it then branches out to the right for about a quarter of a mile along a cross road, where it terminates.

The village has a gentle slope towards the junction of the two roads, which forms the lowest point. The occupation of the inhabitants is chiefly stocking-weaving, with agricultural and some other branches of labour. Work appears to have been abundant and wages good. The position of the village geologically seems to be on the red marl of the new red sandstone, and overlying the lower Keuper sandstone. The subsoil is for the most part very loose, permitting the free passage of water, which lies at a depth of a few feet from the surface.

The water supply of the village (for domestic purposes) is derived from numerous wells sunk through this soil to an average depth of 20 ft., into the permanent water-bearing strata; these wells are for the most part lined with dry stones or bricks. Most of them are covered, and are supplied with pumps. Wells constructed in this manner of dry steining through a loose subsoil are always liable to contamination by surface drainage and percolation of faulty sewers and cesspools.

The water from all the pumps appeared clear and sparkling, free from smell or taste, and containing, in some instances, but a little flocculent matter in suspension when viewed through a considerable stratum. The water of a pump in Barrack-yard—the source of all the mischief in this epidemic—was an especial favourite, and no little indignation and dissent were expressed by many of the inhabitants when it was condemned and closed as unfit for human use.

The drainage of the village is such as is usually found in country districts. The central sewer receives surface water, house-slops, and the overflow of privies and middens. These drains are egg-shaped in section, constructed of earthenware-pipes longitudinally divided in two and jointed with clay, so that the system practically admits of free interchange of internal sewage and external subsoil-water varying with the circumstances of alternately wet and dry weather. The drainage arrangements are very defective; middens foul and wet, and fully exposed.

Touching the previous typhoid epidemic,—towards the end of 1857,—the complaint suddenly broke out simultaneously in a row of houses adjacent to the church, and here there were about 100 cases. The disease then rapidly spread to other parts of the village, so that finally more than 500 cases occurred.

The recent typhoid attack, with which we have now more especially to deal, seems well defined in its origin and course, for in the spring of last year an infected person arrived at the village. Some time afterwards a member of the family, a married woman, took the disease and ultimately died of it in the following June. Barrack-yard, before referred to, consists of a group of buildings, eight of which were occupied by families: one side comprises half a dozen houses, the opposite is formed by a school, the third side is not built upon, and the fourth consists of three houses partially separating the yard from the road. The central portion of the yard consists of gardens, four privies, many middens, and a pump and well. Now the privy-pit nearest to the well was always dry from leakage, and inquiry on the spot shows that this necessary was used by the first female patient. The water of this well furnished the domestic supply to the inhabitants of the yard and others; Dr. Dupré's analysis showed it to be highly charged with animal excrement, the nitrates and chlorides were present in such proportions as would be furnished by a mixture of equal parts of pure water and London sewage! In about fourteen days after the patient had had access to the yard privy a number of fever cases broke out simultaneously in Barrack-yard,—ultimately about twenty typhoid cases, fifteen of which occurred in five houses, and not a house escaped! Other inhabitants round about made use of this foul water—for it was in good repute as a beverage—and suffered from the same complaint; indeed the disease was confined entirely to those who drank of the water, some persons coming from distant parts of the village to partake of it, but the fever was always confined to those members of the family who had used the infected water. In all, about 100 persons were attacked with typhoid fever, of whom fifteen or so died.

Soon after the commencement of the epidemic, the village established a "sewer authority," and this board very properly instituted an inquiry into the condition of the waters of the public wells, and exerted themselves praiseworthily in carrying out various sanitary improvements, including the construction of new lines of sewers. Half a dozen of the public well waters were submitted to analysis: all the specimens were declared to contain sewage and animal oxidised matter, whilst the greater number contained unoxidised polluting matter, in one instance to a notable extent. Subsequently to the analyses being reported, the wells were examined and cleaned out, whilst some were closed, and, with one exception, all the waters were discovered to

be polluted by percolation from sewers and cesspools lying in immediate proximity to the wells. The exceptional well was an open one, and in close contact with a foul ditch; indeed the communication between the two was so intimate that it appears doubtful whether the well supplied the ditch or the ditch the well. In wet weather there can be no doubt that the flow is from the ditch to the well.

Condition of the various public wells examined:—

No. 1. The Church-wall Pump.—This well abuts upon the graveyard, and is on ground presenting the appearance of having been cut out by a curved line for the latter; in addition to the probable contamination from the burial-ground, there is the certainty of it from the intersection of the adjacent main sewer and the chief spring of the well, as before stated.

No. 2. The Hall-lane Pump.—Some sludge was removed from the bottom of this well. A sewer ran close by and a leakage from it into the well was ascertained.

No. 3. Tong Lodge Pump.—This well was in very close proximity to a cesspool, separated only by a 9-in. brick wall; the sewage ran through the joints and crevices mingling with the water. A cartload of black, stinking mud was taken out.

No. 4. The Horse Pool Pump.—A privy-drain was discovered at a distance of 18 in. or so from the edge of the well, and the intervening soil was saturated with filth; moreover, there remained marks of sewage trickles upon the face of the steining.

No. 5. The Long-street Pump.—A disused cesspool was found about a foot from the margin of the well; however, house-slops and street drainings ran into it, and from there into the well. Also, two other drains from adjacent houses ran close by the well.

No. 6. The Camberry Well.—This is an open well about two yards deep, and contained a good deal of muddy deposit. It is in juxtaposition with a foul ditch.

The history of this typhoid epidemic at Burbage is very instructive: it is another instance of many in which slops and excrements are allowed to soak into the ground and again be pumped up at a little distance, and called drinking water, thus becoming the medium of communicating pestilence and death to the consumers.

There is no reasonable doubt that these waters have been charged with sewage matter for a very long time, some of them to a remarkable extent; and beyond occasional diarrhœal attacks not much inconvenience has been experienced from this practice until the virus of contagious disease is imported, when, by the agency of the domestic water supply it is spread in every direction. That the people should be allowed to poison themselves reflects discreditably upon the local health authorities whose duty it is to see that adulteration and pollution of water, air, and food are not permitted under any circumstances.

INSTITUTE OF PAINTERS IN WATER-COLOURS.

The exhibition now open in the Gallery of the Institute of Painters in Water-Colours, consisting of 243 pictures, is above the average of excellence, and the number already marked "Sold" show that the public have discovered this. If we were called on to name the case in which the greatest progress had been made, we should certainly point to the drawings contributed by Mr. Edward H. Fahey, whose early training as an architect is serving him well in the presentation of landscapes in which buildings form prominent portions. There is a great charm about the drawings he has contributed on the present occasion; we would especially point to 27, "St. Peter's and the Vatican, from the Viale di Prate, Rome," and 156, "Sta Maria Maggiore, Rome;" and we augur for this young artist a brilliant career if he continue to progress in the way he has done since the last exhibition. Mr. Edmund Warren has given up some of his body-colour with advantage, and contributes several landscapes of considerable beauty. 35, "Beaten," by Chas. Cattermole; 60, "Jonas Hanway and his Umbrella;" 195, "Richard and Kate," H. Tidey; and 170, "In the Brickfield," C. Green, are amongst the subject pictures that will attract most attention, the last-named especially, which tells its story well, and is full of natural expression. Mr. L. Haghe contributes several elaborate interiors displaying his well-known skill, as does Mr. Carl Werner, especially 44, "Interior of the Temple of Karnak." 81, "Rest," Hubert Herkomer, and 103, by the same artist, will be noticed with pleasure; and it would be unjust if, even in so brief a notice as this, we did not point out with commendation 77, "Sea Roamers," H. G. Hine; 84, "The Listener," Emily Farmer; 117, "The Sacred City of Benares," T. L. Rowbotham; and 129, "Hauling up Wreck after a Storm on the French Coast," by R. Beavis.

ON REREDOSES.

ARCHITECTURAL ASSOCIATION.

The Saturday afternoon visit (13th instant) was made to the parish church, Croydon, nearly rebuilt, after the fire, and always notable for its broad fine nave and imposing western tower. Archbishop Whitgift's Hospital (almshouses), not quite robbed of all their old-worldliness by renovations, and Beddington Church, reached by the pleasant river-side bridle-path, were also visited; the latter building, not long ago added to, decorated with painting on roofs and walls, with mosaics, much stained glass, marble pavements, and other modern additions to its excellent old brasses and woodwork in screens and stalls.

At the meeting of the Association, on Friday evening, the 19th, thanks were voted to the vicar of Croydon and all who had assisted in these very successful visits. A paper was read by Mr. L. W. Ridge, "On Reredoses," of which the following is an abstract.

The term reredos is used in other senses, but for the purpose of this paper is to be taken to mean "the wall or screen at the back of an altar or communion-table in a Christian church." Its object is to give importance to the altar, usually considered the material centre of the church, up to which all the architecture should lead, and so nearly a fixture in practice as to justify a fixed, solid, and permanent character in its accessories, and varying itself in size to so comparatively small an extent as to call for in these surroundings some adjustment to the general dimensions of the building. The original form (1.) was probably the retable, without truly architectural features, decorated only with painting and sculpture, and more or less portable. Examples at Norwich, Worstead Church, Aächen (reproduction at South Kensington), and the retable kept in the south-east aisle at Westminster. Next in the order of time (2.) is the type found in the Chapel of the Nine Altars at the east end of Durham Cathedral, adapting the arcade round the chapel. An arrangement similar in idea occurs at Chichester, a complete specimen remaining at the east of the north aisle of the nave (both illustrated in Architectural Association Sketch-book). A range of thirteen small niches (total size about 7 ft. by 2 ft.), containing standing figures of apostles, with emblems, and one in the act of blessing in the centre, remains in Bampton Church, Oxfordshire, date about 1350, built into the east wall of the north transept. Parker's "Glossary" also gives a range of ogee crocketed niches at Somerton Church, Oxfordshire, date about 1400, and eight panels, with foiled heads, probably painted originally, and with horizontal cornice occupy the whole width of the east end of the chancel of St. Thomas, Salisbury (date about 1450). At Hampton Bishop, Herefordshire, two rows of statues are found. Enstone Church, Oxfordshire, has at the east end of the south aisle a three-light window; six shallow panels, of the same total width as the window, fill the space between the altar and the sill, and canopied niches are formed in the window-jambs, which also remain at St. Ives, Cornwall. The detached screens, such as that to the high altar at Westminster, to the people's altar of the nave of St. Alban's, the Neville screen at Durham, &c., supply another type (3.), being solid altar-screens, containing also, in some instances, within their area a sort of reredos proper. These were eventually outdone in size and magnificence by the gigantic erections (4.) reaching up to the vaulting, as at the high altar at St. Alban's, at Christ Church (Hants), at St. Mary's Overy, at Winchester Cathedral, &c. A Spanish work in wood, in the South Kensington Museum, of considerable dimensions, covered with paintings of the history of St. George, may also be quoted as an example of the prominence attained by this feature. (All the great English examples suffer greatly from the destruction of the figures which formerly adorned them; their vacant niches merely suggesting their possible effect.) The post-Reformation reredoses, with few exceptions, seem to supply no useful lessons; the habit of using them mainly for long, more or less legible, inscriptions dictated a class of treatment hardly likely to have been adopted under other circumstances. Of the modern examples, without specially naming particular specimens, it may be said that the architects of the Gothic Renaissance have had to develop the reredos mainly by themselves, and have rarely done so with complete success. It is a purely ornamental feature; and, in the absence of direct practical purpose, without the guidance of precedents, it cannot be pretended that the Gothic school have been lately more successful than any other. In consequence of the thorough destruction effected at various times, very few instances, and perhaps no complete instance, of the arrangement at the high altar of a parish church remains. From a consideration, however, of specimens in other positions, some of which are named above, and of their general treatment, we may conclude that a reredos should be considered as properly a work in which architecture, sculpture, and painting, or at any rate two of the arts, should be shown; and that it should not be isolated in character, but the roof, the walls adjoining, the window-jambs, &c., should all combine with it to form a satisfactory whole. If the east window cannot be parted with for any reason, a central pier, as at St. Columba, Hackney-road, will often put the centre at least of the reredos in a better light; in all cases powerful side-lights must be had, as effective shadow in sculpture can only be obtained,—or the whole at all properly lighted,—by their means. Generally speaking, a subdued restful effect, due to strongly-marked horizontality in the composition, will be found conformable to the best precedents; this horizontality to be given by the preservation of certain fixed levels for similar features when continuity of line is interrupted, and by the absence of many raking lines. The subjects sculptured or painted should be such as may be deemed specially appropriate to this part of a church, composed of emblems, types, and a Crucifixion,—a single figure conventionally rendered.

Mr. F. T. Dollman said,—"A curious piece of information has been communicated to me by a distinguished architect (Mr. B. Ferrey), and I am at liberty to mention it again. In the work of restoration at a church, under a painting by Sir James Thornhill was found a text-inscribed surface; and on removing this latter a very splendid reredos was brought to light. This occurred only a few weeks ago. The reredos contains painted subjects, some in very good condition: a Crucifixion, figures of St. Mary and St. John, figures of founders, &c. Strange to say, however, it has been deemed advisable to cover up this work of art, to preserve it for a future generation, as it has been pretty satisfactorily concluded that it would be either impossible or unwise to trust it to the custody of this. A statement like this may appear almost improbable; yet it is quite borne out by my own experience of the disappearance by absolute destruction of many works of Mediæval painting. As to the paintings on reredoses, any historical treatment seems a mistake in portions of a distinctly architectural framework."

Mr. G. H. Birch (the chairman of the meeting) remarked on the inappropriateness, in his opinion, of a painted or mosaic cœnaculum as an altar-piece. On art and mystical grounds, he thought it most undesirable; and, on the score of mere appropriateness, a dramatic presentation of the treachery of Judas—even in Leonardo da Vinci's great work the prominent motive—would commend itself to few considerate people.

PROPERTY IN IDEAS.

It was a long, long time before the commoner and his property were at all safe, the one from the possible malignity, the other the cupidity of the barons; and it has taken several centuries to frame those laws which now render the liberty of the subject and the rights of material property less violable. As the rights of property became more respected, men turned their minds to its improvement; to the development of the material resources at their command; and mind so invested became of greater and greater value and importance,—of such value, indeed, that mental capital so invested, perhaps the only true capital, has long since been recognised as property, and a special code, the patent laws, devised for its

protection. In this direction the best order of minds, the inventive and constructive, has found its reward; and, turn which way we may, there is on every side an overwhelming wealth of material resources and appliances, whereas the political and social machinery, for the improvement of which all these superior means were said to be designed, remains pretty much *in statu quo*, or is, perhaps, from an inevitable increase in bulk, clumsier than it was fifty years ago. But as the field for the application of mind to the improvement of material property becomes more restricted by the vast amount of work already accomplished, intellectual effort naturally turns towards the political and social chaos, to the reorganisation of the national fabric, affording, as this does, ample opportunity for the exhibition of the constructive faculty. Unfortunately, however, property in ideas is not so well respected and protected as goods and chattels, and therefore is as much exposed to the depredations of the powerful and unscrupulous as material property was of old time. Now, if there be any kind of property more valuable than another, it is ideas of this order; for they not only enrich and render a nation more powerful, but often confer benefits upon the whole world. As there is, however, no protection for this kind of mental investment, it is only the noblest order of mind that will hazard years of thought on such a risk; for all the results of his labour may be pitilessly wrested from him, and his intellectual wealth and credit appropriated. Seeing, then, of what vast importance ideas are to a nation, to the world, it behoves all honest men to band together to protect such property, and till laws can be framed to punish robbery of this kind with inflictions as great as those for larceny and burglary, to visit such malefactors with a swift moral lynching.

It is not at all improbable that before long we shall have an association for protecting the originators of ideas, and a kind of intellectual police organised for the protection of mental property. It is the more needed, as the thoughtless who see nothing in "the right thing" when it is done, are as numerous now as in the days of Columbus: it appears so simple, everybody ought to have thought it; yet the fools who "cannot see anything in it" when it is done, may be as easily nonplussed on the spot as they were a century or two since with the egg.

Now and then a great idea may be accidentally stumbled upon; but in the majority of cases ideas come of great natural ability, thoroughly cultivated faculties, and self-devotion; of a very considerable investment of time, vital energy, and money. The seeds of great thoughts fall here, there, and everywhere, but seldom, indeed, do they fall on sufficiently good ground to fructify. And are the fruits of the harvest reaped from such golden soil as this to be at the mercy of any powerful but lawless freebooter, appropriated without possibility of appeal or redress?

Evidently people believe such flagrant spoliation is possible. There is a shrewd suspicion abroad that the powers ruthlessly appropriate any person's ideas they will; and the question naturally arises, "Whose turn will it be next?" No one can be certain that he himself may not soon be a sufferer.

Men of the order of intellect referred to ought to be the very first objects of a nation's regard and protection, and to be brought to the front as soon as the possession of such powers is discovered. Such men there are, though their fame does not perhaps as yet extend beyond a very limited circle; and it is well we have such "watchers," with power to point the way, and who, being free from the distracting influence of official detail, can conceive and be the expounders of the *general forms* of a new order of things. Men of this calibre of intellect require the more protection, inasmuch as being too proud to solicit either acknowledgment or reward, they are the more easily despoiled of their own.

Although, as we have said, there is a very prevalent and strong suspicion that the powers that be appropriate whatever they will in the way of ideas, without acknowledging or rewarding the originators, we are very loth to believe that any body of English gentlemen would coolly and wittingly despoil any man of his intellectual property and title,—would filch and strut in borrowed plumes,—because their owner happens to be a modest and silent worker, powerless as things are constituted to hold his own against such tremendous odds. We are well aware that it lies within the power of the Imperial Government to appropriate, under certain circumstances, private property for the benefit of the State, and this power may probably extend to ideas. "The Queen can do no wrong;" but if compensation can be legally demanded for an appropriation of goods, much more ought compensation to be obligatory in case of an appropriation of ideas, and the public have a right to know the name of the original owner of the intellectual property appropriated. It is the duty of every Englishman to see that justice is done to proprietary in ideas, as well as of goods and chattels. To deprive a man of his fair acknowledgment and reward, after having enunciated some important project of State reform, is to rob him of his intellectual wealth,—of the most valuable of all property. But although we cannot bring ourselves to believe that any body of English gentlemen would be depredators of this kind, there is, doubtless, a predatory class which preys on other men's ideas. This is the class which furnishes the pick-brains of society. But, as we have said, petty larceny in ideas, much less wholesale appropriation, will no longer be tolerated. Like other thieves, the pick-brain will try to erase the crest and initials from the stolen property, and usually adopts similar scoundrelly tactics when morally prosecuted, but all in vain. If he parades the stolen property, it is seen to be out of keeping with his mental antecedents and consequents, and, to use a material analogy, as incongruous as a diamond pin in the cotton necktie of the "cracksman." The pick-brain, as the highway robber or the pickpocket, can never make the property appear as if it were his own; and even should a knave of this kind succeed for a time in wrongfully withholding the credit of an idea from its rightful owner, the future will have no difficulty in deciding to whom the title and property really belonged.

CROWN RIGHTS AND THE BUILDING ACT.

AT the usual meeting of the Metropolitan Board of Works, on Friday in last week, the superintending architect stated that during the recess it was found that a building was in course of erection in Whitehall-gardens, beyond the line of frontage of Gwydyr House. A letter was therefore sent to the secretary of the Local Government Board, calling attention to the 13th sec. of the "Local Management Act," 1862, and the necessity of an application to this Board for consent. The secretary replied that the matter had been referred to the Office of Works, and Mr. Lawrence of that office pleaded that the 6th sec. of the Building Act exempted Crown buildings. The solicitor of the Metropolitan Board took the contrary view, and held that the Office of Works had no right to go beyond the general line of frontage in any street. After a brief discussion, in which the opinion was expressed that the matter was of importance, and should be definitely settled, the solicitor was empowered to take such steps as he might consider necessary.

ORIGIN AND HISTORY OF THE GREAT CENTRAL GAS COMPANY.

A PAPER on this subject has been read at the Society of Arts by Mr. A. Angus Croll, who was the mainspring of the Great Central Gas Company; but in dwelling on what he did to help the breaking-up of the metropolitan gas monopoly, he forgets or fails to allude to the primary force which not only destroyed gas monopoly in the metropolis, but in many other places throughout the country, and reduced the prices on an average two or three hundred per cent., while it raised the dividends of the gas companies, as always predicted, in fair proportion to the reductions in price. The *Builder*,—which the first gas journal, (a creation of the *Builder's*, as an opponent), characterised as "the monopolist of incendiary gas intelligence,"—*alone* did all this work, by its articles, continued for years, on "The Gas Movement;" and Mr. Croll's origination of the Central Gas Company was just one of the innumerable results of that movement.

In reference to the later history of the Central Gas Company, Mr. Croll says:—

"It is with great pain and reluctance that I proceed to speak of the subsequent history of the company. It is, however, necessary to glance at it in a sentence or two. The embezzlement of 70,000*l.* by one of the clerks of the company a few years ago excited the astonishment of the whole empire, and the disastrous Wood-street fire involved them in a loss of 30,000*l.* Thus, from these two circumstances alone a sum of 100,000*l.* has been lost to the supporters of the company, and yet its prosperity was laid upon so firm and sure a basis that it has paid 10 per cent. upon its capital from the commencement of the undertaking, in spite of all losses. And now the company has checked all further prosperity and development by allowing another and less thriving company to absorb their own, on condition of receiving a dividend of 10 per cent. This being the highest legal dividend, the shareholders have only suffered indirectly by losing the prospective advantages of investing additional capital at a high rate of interest in extensions of plant and works, such extensions, and consequently all such further profits being reserved for the shareholders of the Chartered Company, which has absorbed them.

But if the shareholders have only lost this privilege, what have the gas consumers in the City of London lost?

The Great Central Company were paying 10 per cent. dividend, the highest permitted by the Act of Parliament; and therefore if the contract with the writer had remained, he would have realized a good profit, and the price of gas ought now to have been reduced 6d. per 1,000 ft. The gas rental of the Central Company for the year ending June, 1871, must have been about 93,000*l.* per annum; adding 10 per cent., the usual annual increase, and we have for the present time a rental of about 103,000*l.*

Taking the quantity of gas required to supply this rental at 2s. per 1,000 ft., viz.;—1s. 9d. for the gas supplied at the company's meters in accordance with the New Central, and 3d. per 1,000 ft. for increasing the illumination six candles in addition, it is evident that the price of gas ought now to be reduced, had it not been for this last and most improvident act of the Central Gas Company, which would not only have effected a saving of 20,000*l.* to the consumers supplied by the Central, but the gas would have been of a purer quality, and of an illuminating power equal, as shown by the present mode of testing, to twenty candles."

At the close of the discussion which followed the reading of Mr. Croll's paper, he said:—"As regarded the general question altogether, he had no desire to say one single word in reference to gas companies generally, but only wished to put on record the connexion which he had had with the promotion of the Central Gas Company, as it had now ceased to exist. The result of the paper amounted to this, that whilst the gas companies opposed it at first, saying it was impossible to sell gas for less than 7s. per 1,000 ft., they were now selling it at 4s., and getting a dividend of 10 per cent. Mr. Chubb (who is secretary of the Imperial Gas Company) shook his head, but Mr. Chubb's company derived a larger amount now than it did before, and at the same time supplied gas to the public at 3s. 8d., instead of 7s. Looking at all these facts, he did not think he need be ashamed of the action he had taken in the matter."

We are certainly not ashamed of the part *we* took in the matter.

EMPLOYERS AND EMPLOYED.

As the question of strikes and the relations of employers and operatives is occupying so much attention, Mr. John Smedley, the principal of a well-known and very old-established firm at Matlock, sends us particulars of his own experience. He says:—We have never had a strike, or any disagreement with our hands in my time, nor in my father's or grandfather's time. We have been engaged in spinning and manufacturing long before the commencement of this century. My ancestor's idea was, that those who rode inside the coach should make those as comfortable as possible who are compelled, from the mere accident of birth, to ride outside. Mr. Smedley then enters into particulars as to arrangements for preparing refreshments and meals at the option and chiefly at the cost of the operatives, and as to other conveniences at the cost of the firm, such as soap and towels for washing, which is done in the time of the firm, and so on; and he thus continues:—

"Many years ago I had to follow the changes constantly going on in manufacturing and go into a class of goods more in general demand, in which, of course, we find keen competition; but that did not induce me to try to alter the policy towards the workpeople, and I have still found it the most profitable to keep to our plans in trying to make them as efficient as possible for the work they have to do. I believe the present disagreements between employers and employed is the long neglect of consideration for the workers, and the want of sympathy and personal knowledge and intercourse with them, and now, like a neglected family, it is bringing its natural and inevitable results, and till this is altered masters may meet and pass resolutions just as effective as if they passed one that there should be fine weather for the next three months."

Amongst other arrangements, Mr. Smedley says:—"We keep a supply of dry stockings for those women to put on who come from a distance and get their feet wet, and every overlooker has a stock of mackintosh petticoats to lend the women going a distance on a wet night. When I go amongst them all recognise me, and it is always a pleasure to go through the mill. I wish I could make their lot easier, for with all we can do factory life is a hard one. . . . It is a sad state of things when masters have to combine against the hands and the hands against the

employers: it has just the same effect as parents combining against their children and the children against their parents. If the children are not what they ought to be, it is very certain to be the parents' fault in not gaining their affections and confidence."

RENFREW MUNICIPAL BUILDINGS.

Crowds of persons, including Freemasons, Good Templars, Odd-Fellows, Foresters, Knights of Malta, and all sorts of associated bodies met together in Renfrew on the 13th inst. to lay the corner stone of the new Municipal Buildings designed by Mr. J. J. Lamb, architect, of Paisley. The style adopted for the building is a free adaptation of foreign modern Gothic, with a colouring of Scottish baronial. The principal front, towards Hairst-street, presents a façade 70 ft. in length, two stories in height, with a tower at the north-east corner 21 ft. square. It is finished at the angles with large corbelled turrets, awfully out of place, notwithstanding the locality, and rises to a height of 105 ft. to the platform of its lofty roof, finished with ornamental cresting and finials. About 80 ft. from the level of the pavement, and between the turrets of tower, are balconies entered by four doors from the prospect room. In the centre of the elevation to Hairst-street is a balcony, from which the public in the square can be addressed on the occasion of open-air public meetings at election and other times. The walls of the building are built in random rubble. On the entrance floor, entering from Hairst-street, there is the chamberlain's office, a bank office, and private room; and entering from Fulbar-street there are the town clerk's public and private offices. The council chambers are also on this floor, 39 ft. long and 24 ft. wide, entered from a corridor. From this corridor, and also from Dunlop-street, the police office, superintendent's and witnesses' rooms are entered, and these are furnished with cells, strong-rooms, &c. The public-hall is on the first floor, is 65 ft. long and 41 ft. wide, and will be seated for about 800 people.

The construction of the building is under the superintendence of Mr. Chas. Henderson; and the following are the names of those tradesmen whose offers up to this time have been accepted:—Masonry, J. Drysdale & Son, Glasgow; joiner work, Mr. Wallace, Paisley; slater work, John Robertson & Son, Johnstone; plumber work, John Morrison, Paisley; plaster work, John Brown, Greenock; iron girders, John Stewart & Son, Irvine; miscellaneous iron-work, Alex. Pottie, Renfrew.

THE KING'S SCHOOL, SHERBORNE.

This school, which was originally founded by Edward VI., has been lately reconstituted under the Endowed Schools Act, it being intended that it should be the chief school of the West of England, and number between 300 and 400 boys. For this purpose, large building works will have to be undertaken, including either the building of a new chapel or enlarging very much the present one, which was a portion of the old Abbey buildings, restored and enlarged by the late Mr. R. C. Carpenter. There are also in contemplation a large schoolroom, library, and governor's room; study buildings, class-rooms, laboratory, and scientific lecture-rooms; masters' houses, with dormitories; besides a swimming-bath, covered fives-court and workshops. Instructions have been given to the architects, Messrs. Slater & Carpenter, to report on and prepare alternative schemes for the consideration of the governors.

BRIGHOUSE CEMETERY COMPETITION.

The designs submitted have been exhibited. The local Board expressed their approval of the style of the Pontefract cemetery chapels generally; and they also stipulated that premiums would be given for the three best plans, the cost of erection not to exceed 2,000*l*. The three chosen as the best have each a spire rising from the centre. In one a mortuary chapel is annexed, so that the bier would not need to be taken into the chapel proper at all, and in the chapel a mirror is shown, so arranged that the bier could be seen by the mourners in the chapel during the burial service. This plan is much approved by the Board, but it is considered that the building, as shown, could not be erected for the sum stipulated. This plan, drawn by Messrs. Gay & Bartram Payton, of Bradford, is placed first—premium, 25*l*. The second, 10*l*., is given to Mr. T. W. Helliwell's plans. The third, 5*l*., is awarded to Messrs. Holtum & Connor, of Dewsbury.

THE TRADES MOVEMENT.

London.—A public meeting of carpenters and joiners has been held at Wilcox's Assembly Rooms, Westminster Bridge-road, for adopting measures in furtherance of the nine-hours movement. Mr. Sadler, having been voted to the chair, stated that a memorial had been presented to the master builders, asking that the hours of labour be reduced from ten to nine hours per day, and that the wages be increased to the extent of 1d. per hour. The result of that would be that, making allowance for the Saturday half-holiday, the hours of labour would be 51 per week, and the wages would be 1*l*. 18s. 3d. per week. A resolution was unanimously passed approving of the course the delegates had adopted.

Maidstone.—A meeting of bricklayers and carpenters has been held at the Sun Inn, High-street, Maidstone, Mr. Tomlin occupying the chair and Mr. Horscroft the vice-chair, to receive the reply of the employers, after a conference with the deputation of workmen held in the week previous. The reply stated that at a meeting of the master builders the following resolutions were adopted:—

"Firstly, 'That on and after the 1st day of July the standard wages of bricklayers and carpenters of this town be 6½d. per hour.' Secondly, 'The full time of 56½ hours to commence on the second Monday in February and terminate the second Monday in November, and that the short time of 50½ hours commence on the second Monday in November and terminate the second Monday in February, beginning at 7.30 a.m., having breakfast previous to commencing, and a half-hour only to dinner.' Lastly, 'That all other existing regulations remain unaltered.'"

After some discussion, the following resolution was adopted, which was directed to be forwarded to the employers, after which the meeting terminated:—

"That this meeting, having heard the offer made by the employers to their memorial and code of working rules after the conference with the deputation, think it a step in the right direction, but that it is still most unsatisfactory, as six years ago a struggle of six weeks' duration was maintained for the same amount per hour the employers now offer, and this meeting could not think of accepting any sum less than 7d. per hour all the year through; 54 hours to constitute a week's work from the second Monday in February to the second Monday in November, and 50½ hours from the second Monday in November to the second Monday in February. And, further, this meeting declines to deviate from the general tenor of the code of working rules."

Birmingham.—The question of increased pay has been discussed by the arbitration board, and ultimately the question was left to Mr. Kettle, who decided that, considering the position of the town of Birmingham, and the advance of the wages of skilled labourers, an advance of 10 per cent. should be granted. He therefore fixed the pay of carpenters and joiners and plasterers at 7d. per hour up to September, and for the rest of the year 7½d. The labourers he decided should be paid 4¾d. per hour throughout the year.

Altrincham.—A strike of painters at Altrincham and Bowden has come to an end, the masters acceding to the demands of the men for an advance of wages from 6½d. to 7d. per hour, and a reduction of the hours of labour from 58 to 54½ per week. Several minor propositions on the part of the masters with regard to the working rules have been accepted by the men.

Newcastle.—When the late strike at Newcastle for nine hours was settled, it was agreed that overtime should not count until the whole of the 54 hours had been worked. The workmen were dissatisfied with this, and the dissatisfaction has been greatly increased, and the delegates of the Nine-hours League have agreed to call a meeting, at which a resolution will be submitted asking a conference with the employers with a view of obtaining a revision of overtime. The workmen want each day's overtime to count for itself. Trade is busy, and it is feared the matter may not be easily settled.

Cockermouth.—The joiners of Cockermouth have struck work, in consequence of the refusal of the masters to grant them an increase of wages amounting to 2s. per week, in addition to adopting the nine-hours system. Since then a compromise has been effected to adopt the nine-hours system, the men withdrawing the proposal for an increase of wages. On this understanding the men have resumed their employment.

Barrow.—The painters in Barrow have struck for an advance of wages. The men some months ago gave the masters notice that on and after the 1st of April the sum of 7d. an hour would be demanded,—the working hours to be fifty-four per week. On the 1st of this month no arrangement was agreed upon, and the men granted another week to enable a decision to be made. At the expiration of the week the masters made an offer of 6½d. per hour, but this the men refused. After consideration, the workmen agreed to accept 6½d. With the exception of two or three of the masters, the 6½d. was refused, and the result was that between forty and fifty men have struck. Hitherto the painters have been paid at the rate of 26s. per week.

Dumfries.—The workmen of Messrs. J. Edgar & Sons, Dumfries, who struck work on account of slaters being employed to point the interstices in the courses of the walls, have removed their tools. On the other hand, all the masons in the employment of Mr. James Halliday, at Cowhill Mansion, and at Sir James Anderson's new villa at Dumfries, struck for slaters being employed pointing the walls at Cowhill. Hitherto it has been quite common to employ slaters for that purpose, as masons will not work on a hanging scaffold beyond a certain height.

Edinburgh.—After a struggle of six weeks the marble masons of Edinburgh have gained their demands,—the fifty-one hours limit, with the same weekly wages.

Arbitration and Compensation for Injuries.—We read in a Leeds contemporary that Mr. Mundella is about to introduce a Bill "to make further provision for arbitration between masters and workmen." The Bill is being drafted by Mr. Wright, barrister, and Mr. George Howell, who is acting on behalf of the working classes. A Bill is also in preparation for the amendment of the law with respect to giving compensation to workmen who may be injured, whilst performing their duties, through the negligence of their employers in failing to take proper precautions for their safety.

Berlin.—The master builders and carpenters of Berlin have issued a notice stating that, in consequence of the journeymen carpenters not having relinquished their strikes against particular masters, notwithstanding the warning against that course of action already published, they have determined to discharge all journeymen carpenters, and to close their workshops.

LONDON CARPENTERS AND JOINERS.

Sir,—I am instructed by the committee of the Carpenters' and Joiners' Nine Hours Movement to forward you a copy of a resolution passed at a general delegate meeting on Saturday evening last, at the committee-rooms, Brown Bear, Bloomsbury, for insertion in your valuable paper. It was passed after hearing a second letter read from the secretary of the Master Builders Society, stating that they think all further discussion on the subject is unnecessary, and therefore decline to receive a deputation from the carpenters and joiners, giving as a reason that they have already received a deputation from the Masons' Society, and that we are to take it as actually a deputation from our own body, which is absurd, and in our (the delegates') idea no answer at all to our reply to their first letter, which was also a refusal to receive a deputation or meet us in any way to discuss the question of the nine hours, and if possible to bring the matter to an amicable settlement without having to take more serious action in order to gain our object; for the men are determined to stand by the principles contained in the memorial, and the responsibility will lie with the employers, and not with the men, if a strike takes place, and which very likely might have easily been avoided, had they condescended to meet us. There have been several large and influential meetings held, at which resolutions approving the course taken by the delegates have been unanimously passed, and for supporting them in bringing the movement to a successful issue.

Copy of resolution passed April 20th, 1872:—"Resolved, that no overtime be worked until the nine-hours movement is settled; and should any man, or number of men, be discharged through it, we pledge ourselves to support them.

Chas. Matkin, Secretary.

THE NEW WORKS ON THE EAST LONDON RAILWAY.

The East London Railway Company have just commenced the extension of their line from Wapping to the Shadwell Station of the Blackwall Railway, which will place the company's line in communication with all parts of London north of the Thames. The works will necessitate the difficult engineering task of passing under the London Docks, the route being through the St. Katherine's Dock basin, which will connect the company's intended northern lines with their present southern system, *viâ* the Thames Tunnel. When the new works just commenced are completed, the company will not

only have obtained railway communication as far as Shadwell, but by means of an exchange station which they intend to erect, they will also have access to the Fenchurch-street station of the Blackwall line. The passage through the docks will not only be an unusually heavy piece of work, but also by far the most expensive portion of the entire undertaking, as, independently of the actual cost of the work itself, the dock company have power to charge the railway company 120,000*l.* for the privilege of their line being allowed to pass under the docks. The line was intended to pass under the docks by a tunnel, at a deep low level, so as not to impede the dock traffic; but in consequence of the dock company not consenting to the railway company tunnelling under them at a lower depth, the railway company have been compelled to fall back upon the old plan of constructing the railway through the docks in a coffer-dam; and we understand that it is probable that the company will have to execute this portion of the work themselves, under the direction and advice of Mr. Hawkshaw, their engineer, in order to relieve the contractor from possible penalties. The estimated cost of this extension is 270,000*l.*, the whole of which has just been raised by the recent debenture issues. On the completion of the new line, a new and commodious station is intended to be erected at Wapping, in lieu of the present temporary structure. It is intended to carry the line still farther, from Shadwell to Whitechapel, where it will join the Metropolitan extension of the Great Eastern line now in progress; thus giving the East London Company direct access to the intended main terminus station of the Great Eastern Company in Liverpool-street. It is fully expected that the works on this section will very shortly be commenced, and proceeded with simultaneously with the construction of the line under the docks to Shadwell.

BUILDERS' CLERKS AND THE SHORTENING OF THE HOURS OF LABOUR.

At a general meeting of the builders' clerks of Manchester and neighbourhood, held at the Hare and Hounds Hotel, Shudehill, at which most of the principal building firms in the district were represented, it was resolved that the following memorial for shortening the hours of labour be presented to the Master Builders' Association:—"Your memorialists most respectfully bring this before you with confidence, knowing the kindly feeling at present existing between employer and employed. That we have good grounds to complain of the long hours now made in the builders' offices of this city and neighbourhood we think you will allow. On comparing our hours with those of the clerks in engineers', merchants', and other offices, we find that we are engaged from three to four hours per day longer, and at books and calculations that for technicalities and intricacies are not to be surpassed in any other profession. We are also employed longer hours than any of the tradesmen or labourers connected with the building trade, and at a sedentary occupation which it is well known is anything but conducive to health. We beg, therefore, that our hours may now be from 8.30 a.m. to 5.30 p.m., with the usual interval for dinner, so that we may have greater facilities for mental and physical improvement. We feel assured that your interests will not suffer, as, from the increased energy which must follow such a concession, we shall then be better able to perform our several duties, and the good feeling existing will be greatly strengthened."

CHURCH OF ST. MARY THE VIRGIN, CROWN STREET, SOHO.

The first stone of the new chancel of this church was laid on April the 17th by the Rev. Canon Liddon. The chancel stands on ground lately occupied by mean houses at the east end of the church; and adjoins the new clergy house. The present nave has no architectural merit, but is interesting as having been formerly a Greek church. It has been, however, much altered and widened when used as a Dissenting chapel. It is intended ultimately to take the whole down, and the new chancel is designed on a scale to harmonise with the design of the future nave. The site, though broad, is not long, and being situated in a crowded and confined street, the church has been designed by the architects, Messrs. Slater & Carpenter, on a large scale as regards height and width. The chancel is of two bays, with windows on the south, and with the east end facing Crown-street. It is groined in sexpartite groining, with stone ribs and red brick vaulting. This is supported by massive buttresses, terminated above the parapet by gablets. The side walls are relieved of all weight by heavy arches inside and out from one buttress to the other, and are placed midway, these forming deep recesses on both sides. The windows are coupled lancets, with cusped circle over. The clear width inside between the buttresses is 29 ft., and between the walls 36 ft. The height from the nave floor to the groining is 60 ft.; to the top of the gable from the pavement, 85 ft. The east wall has five cusped lancets, with a rose over in the gable. The whole will be built of red brick inside and outside, with stone dressings sparingly used. There will be twelve steps to the altar, over which there will be a magnificent baldacchino; but no fittings are at present in hand. On the north side is a small window into the chancel from the oratory of the clergy house. The nave will be of equal height with a north aisle.

Designs for the new schools on the north of the clergy house and church are being prepared by the same architects.

For the chancel works Messrs. Gibson, Bros., of Southall, are the contractors, and Mr. Boulden is the clerk of works.

SCHOOL BOARD FOR LONDON.

The first series of competitive designs,—viz., those for the Johnson-street, Stepney, group of schools,—were delivered on the 16th of April. The buildings are to accommodate 1,080 boys, girls, and infants. The schools for the boys and girls are required by the conditions to be designed on the system of class-room division, with a large general hall, in which both boys and girls will assemble at the opening and closing of the school, and for singing lessons, drill, and other purposes, We gave a list of the architects invited in a late number, but some of them declined the competition. Messrs. T. R. Smith, J. W. Newman, Jarvis & Son, and Arthur & C. Harston are amongst those who have sent in designs.

The Board has confirmed the provisional agreement entered into between Mr. Robson, on behalf of the Board, and Mr. Macey, for the purchase of some freehold land near the Temple Station, as a site for their offices. The price is to be fixed by arbitrators,—viz., Mr. Clark (Messrs. Farebrother, Clark, & Co.), Mr. Currey, and Mr. I'Anson.

SCHOOL BOARDS.

Derby.—At a meeting of the General Purposes Committee tenders for the erection of Gerard-street School were considered. The following were the estimates sent in:—Mr. Bridgart, 2,895*l.*; Mr. Dusautoy, 2,950*l.*; Mr. Woodiwiss, 3,235*l.*; Mr. W. Slater, 3,090*l.* It was resolved to recommend the Board to accept the tender of Mr. Bridgart, which was the lowest. The committee further recommended the Board to ask the Department to sanction the borrowing of 4,500*l.* from the Public Works Commissioners, repayable during a term of fifty years. The loan was for the following items:—2,895*l.* for building; 250*l.*, estimated cost of desks and fittings; 730*l.*, cost of land; 150*l.*, commission; law charges unknown. These recommendations of the committee were agreed to by the Board.

Dewsbury.—The Dewsbury School Board met to examine the plans sent in by competing architects for the three School Board schools intended to be erected at Dewsbury Moor, Boothroyd, and Springfield. The plans selected were by Messrs. Holtum & Connor, of Dewsbury, architects.

ST. LUKE'S CHURCH, LOWER NORWOOD.

This church, after having been closed for eighteen months, undergoing a complete internal reconstruction, was re-opened on Sunday last, when the Bishop of Winchester preached to a large congregation. The church, which was originally opened in 1825, was constructed to seat 1,412 persons, 688 being free seats. The cost of the church was 12,387*l.* It is stated that the accommodation in the church, as reconstructed, instead of being increased, is much curtailed, the total number of seats being only 1,100, according to the architect's plan. As a rule, church alterations and improvements are usually accompanied by increased accommodation; but in the case of the reconstruction of this church the rule has been reversed.

THE BUILDING FOR OFFICIAL BODIES.

It has been stated officially that the building proposed to be erected on the Thames Embankment, for the accommodation of the School Board, is also to accommodate the Metropolitan Board of Works and the Asylums Board. If this arrangement be carried out the present *habitat* of the Metropolitan Board of Works may come into the market, and might be made to serve the purpose of several of the scientific and other societies who are seeking appropriate accommodation, with one large meeting-room, to be used jointly.

THE NEW SCHOOL OF SCIENCE, MUSEUM, AND ART GALLERY, AT SOUTHAMPTON.

The new school of science and the new museum and art gallery at the rear of the Hartley Hall, Southampton, are just being completed by Mr. J. Crook, the contractor. The school is approached from the vestibule of the Hartley by a long corridor on the south side. There are two class-rooms of about 20 ft. by 16 ft. 6 in., and 16 ft. high, and a large drawing-class room 32 ft. by 16 ft. 6 in., and 16 ft. high, with a small room over the lavatory for the use of the master. The art gallery and museum are connected with the science schools on the south, and the art school on the north, and approached by a temporary passage on the west between the Hartley Hall and the new buildings. There are two large rooms of about 42 ft. by 20 ft. wide, and about 18 ft. high, with a connecting door both to the science school and the school of art. They are lighted from the roof, with a glass counter-light in the centre of the coved ceilings, which are moulded and panelled. The large circular-headed swing doors are filled in with embossed plate-glass panels. The gas-fittings are three large brass starlights in each room, and the ventilation has been studied and provided for by Mr. Lemon, the surveyor to the Corporation, from whose designs and under whose superintendence the works have been carried out by Mr. Crook. The science classes will shortly commence their studies in the new rooms.

SALTING OF PARIAN.

The late Mr. C. H. Smith suggested brushing the crystals of saltpetre off the walls as fast as they appeared, and so remedying the evil complained of by "J. S." The crystals are reabsorbed in damp weather if allowed to remain upon the surface, and crop out again when the air is dry; but if removed as they appear in the solid state, the supply, of course, ultimately fails, and the desired end is attained.

Sir,—I have used Parian cement continually, and have found it answer exceedingly well; but last autumn I cemented some internal walls with it, and the paint applied is now perfectly destroyed. A part of it has salted, as your correspondent remarks; a portion has so destroyed the paint that it has become a mere powder; and a part has apparently separated the oil from the paint, the former running down in small streams. To add to the annoyance, a most disagreeable smell is emitted.

I should be obliged if any of your correspondents can account for this, and suggest a remedy. Architect.

COMPLETION OF ST. PAUL'S CATHEDRAL.

Sir,—The latest proceeding of the "Decoration Committee" does not augur well for the success of this undertaking. The members have thought it advisable to appoint a consulting architect who should advise them upon, and therefore, to a certain extent, control, Mr. Penrose's design. The least to be expected was that an architect who had had great experience in classic work would have been chosen, instead of which one has been appointed whose *spécialité* is Gothic of the severest type.

The following is an extract from a speech made

at a meeting held during the recent Conference of architects:—"Nobody ever heard me, or the school with which I happen to be identified, say a word against Greek architecture; but we have fought, and will fight, against the *Sir Christopher Wren abominations*." Mr. Burges understands Gothic architecture, but, holding such opinions as the above, is he the man who should be called upon to assist in completing St. Paul's, "in accordance with the ideas of Sir Christopher Wren"? Is it true they manage these things better in France? One Anxious.

FROM AUSTRALIA.

Melbourne.—The Corporation have had an organ built in London suitable to their town-hall. It is said to be the largest and finest organ which has ever left Great Britain. Messrs. Hill & Son were the builders. The organ was taken out by the ship *Lammermuir*, and is being put up by Mr. Robert Mackenzie, who has in charge its erection. The erection of the instrument will take six to eight months, principally through an error in laying the foundation for the organ when the hall was built. It was supposed that it would stand on a level with the orchestra, but instead of this it will be sunk a depth of 6 ft., and a stand is being made for it which will rest on iron pillars reaching to the basement of the Town-hall. The hall itself is 63 ft. high, by a width of 74 ft., and the organ's dimensions are, height, 46 ft.; breadth, 52 ft. 6 in.; with a depth of 24 ft. The great organ has seventeen stops; the choir organ, ten; the swell organ, fourteen; and the solo organ, thirteen. One of the pipes is large enough for a man to pass through.——The promoters of the new opera-house, proposed to be erected on the triangular piece of land in front of the Model Schools, bounded by Albert-street on the one side, and Nicholson and Spring-streets on the others, have been active of late, although their movements have not been made public. An application was recently made to the Minister of Lands for a grant of the site just mentioned for the Academy of Music, under which title the opera-house will be designated. Plans were forwarded to Mr. Grant, showing the various elevations of the proposed building, as also the interior, which, according to the design, it is said, will vie with many of the finest edifices on the continent of Europe, having several tiers of boxes, and a great depth of stage. The Minister of Lands has notified to the promoters his willingness to issue them a grant of the site. The proposal is to build the opera-house by the formation of a company.——The Church of SS. Peter and Paul, Emerald-hill, of which the *Australian Illustrated News* presents a view, is designed in the Decorated Gothic style of architecture, and shows a slight mixture of French ideas. The plan embraces a nave, 25 ft. wide, terminated by a polygonal apse, and side aisles, 12 ft. 6 in. wide each, a "ladie chapel" on the southern side and lesser chapel and sacristy on the northern. Two projecting porches, one on either side, give access to the aisles. The tower stands at the north-west angle, and is surmounted by an octagonal spire, terminating with a wrought-iron cross at an elevation of 140 ft. The tower projects about 8 ft. beyond the west gable, which likewise projects about the same distance beyond the south aisle, thus obtaining a broken and picturesque outline. The angle formed by intersection of the tower and nave is occupied by circular turret stairs, which lead to the organ-gallery and upper floors of the tower. The organ-gallery extends the entire width of the nave. A large wheel-window of elaborate design occupies the centre of the west gable. Irregular-coursed bluestone ashlar has been used for the general construction, the base strings and weatherings being dressed. The bracing of the different windows has been executed in pressed cement. The total internal length will be about 120 ft. by a width of 54 ft., and the height to the ridge is 50 ft. The estimated cost of the building complete is about 9,500*l.*, affording accommodation for nearly 1,100 persons; but at present only so much as will accommodate 600 people has been built, involving an expenditure of about 4,500*l.*——A new Welsh Presbyterian or Calvinistic Methodist Church has been opened for divine worship in Latrobe-street, Melbourne. It was designed by Messrs. Crouch & Wilson, and was erected by Mr. Ireland, the total cost being about 1,800*l.* Its style is Early Decorated. It is built of brick, on stone foundations, and measures, over all, 65 ft. 6 in. by 42 ft. It is intended to stucco the whole exterior of the church, but at present only the front elevation has been so treated. This façade stands upon an axed bluestone base, and is 50 ft. high to the top of the finial on the gable. The principal entrance is in the centre, and above it is a large triple-light window, with geometrical tracery filled with stained glass from the manufactory of Messrs. Ferguson, Urie, & Lyon. The interior is divided into two portions. The church proper, which measures 34 ft. by 48 ft. 6 in. in the clear, has a sloping floor, and the walls rise to the average height of 25 ft., the mean height of ceiling being 29 ft. At the rear of this are two vestries, together occupying the whole width of the church, and so arranged that should the extra space be required to meet the growing wants of the congregation, the throwing down of the dividing wall will not mar the proportions of the building. The height of these rooms is 11 ft., the space above being in one room, to be used for lecture purposes or smaller week-night services.

CORWEN CHURCH.

The parish church of Corwen, North Wales has lately been restored, and also enlarged by the erection of a south lean-to aisle. Previously to the recent works the building was a barn-like structure, possessing scarcely any architectural character, although the main walls were in a good condition. The debased windows have been cut away, and new ones of a proper design inserted. The east end of the chancel had a triplet window of Early English date,—blocked up, however: this has been opened out. The old church possessed transepts, the south one being of no antiquarian interest whatever. The latter has been pulled down, and a lean-to aisle substituted for it, the north transept being still retained. Stone copings and carved crosses to all the gables replace the common slate verges of the old building. A stone arch has been corbelled out over the entrance to the chancel, which is not otherwise now constructionally divided from the nave. The exact position of the ancient rood-screen (not now existing) was discovered, and so supplied an authority for the length of the chancel, and the south chancel door, with its remarkable stone head, has been carefully preserved. The tradition is that Owen Glendower, from a neighbouring mountain height, violently threw his sword against the church, where its impression still exists. The nave and south transept roofs have been opened out and repaired where necessary. New wood brackets have been placed under some of the tie-beams. It was found necessary to put an entirely new roof to the chancel, with a polygonal-shaped panelled ceiling to it. The nave arcade, opening into the south aisle, is in four bays, with simple carved capitals of an early character. A fragment of the frieze of the old rood-screen has been utilised for the altar-rail, uprights and brackets being placed underneath it. The roofs are covered with the local slates, a simple serrated tile cresting serving to emphasize the chancel. The nave, aisle, and transept are paved with tiles. The sanctuary has been laid with rich encaustic tiles of Mr. W. Godwin of Lugwardine's manufacture, according to the architect's design. A reredos of brown alabaster and marble inlay has been placed over the altar, and is the gift of Archdeacon Ffoulkes. The chancel seats are of oak, with pierced fronts and shaped moulded bench-ends. The pulpit is of Bath stone, and has been given as a memorial to a relation. The emblems of the sacred Cross, Star of Bethlehem, Purity, Christian Hope, and the immortality of the soul, are introduced in the panels. The fragment of the rude old Norman font has been set upon a base of suitable character. The nave is seated with deal stained benches, having square panelled ends.

The carving to the church, the pulpit, and the reredos have been executed by Mr. J. Lewis Jaquet, of Vauxhall Bridge-road. Mr. W. E. Samuel, of Wrexham, was the contractor for the work, the total expense of which amounts to about 2,000*l.* The architect is Mr. Ferrey, F.S.A. The restoration of the tower has been deferred to a future period.

Music and Drawing in the City of Paris Schools.—The municipal council of Paris has voted a sum equal to 4,800*l.* for the teaching of singing in the city schools and the expenses of the Orpheonic meetings. It has also awarded a subsidy of 3,420*l.* to the schools of design.

ARRANGEMENT AND CONSTRUCTION OF FARM BUILDINGS.*

In former years nothing, perhaps, was more neglected, in an architectural point of view, than the designing and arrangement of farm buildings; and I think it cannot be denied that most of the sites were badly chosen, some being on low ground where drainage—which, however, at that time was little thought of—would have been impossible, and in many cases instead of the floors being raised from 6 in. to 8 in., which they ought to be, were probably sunk to that extent or more below the level of the surface, the result of which is, that the floors of the buildings were occasionally standing 2 in. or 3 in. deep with water and liquid manure coming in from the folds.

Other sites are on the slope of a hill, and the ground excavated to make it sufficiently level for the buildings, and some important parts, such as the stables, byres, or the barn, are built against the side of the thus formed embankment with the roofs nearly level with the surface: the consequence is, that the water percolates through the walls, causing the floors to be always wet and damp; and in many cases, although drainage was easy, still, perhaps, not attended to or thought of.

Again, some buildings are placed on the top of a hill, without having the slightest shelter; consequently in stormy weather the roofs have been blown off and the cattle almost starved to death by being exposed to the bitter blasts.

I have also noticed that the farm-houses were sometimes placed on the low side and close to the steading, and the moisture from the folds running in waste almost to the very entrance-door. And in addition to these evils how often we see the buildings placed at one side or in one corner instead of in a central position of the farm.

With regard to the arrangement of the buildings, no care or thought seems to have been entertained for the comfort or health of the horses and cattle, or for the convenience or saving of labour of the farm servants, but have the appearance of having been placed by accident rather than by design; for, instead of the straw-barn being placed in the centre, and contiguous to the stables, byres, and folds, where straw is mostly required, how often is it placed in an isolated position? as if it made no matter what distance the straw was to be carried and littered about,—no matter whether the byres, stables, &c., were at a considerable distance from the folds, and the manure from them never trodden by the cattle, but merely laid up in a heap at the outside of the door, and perhaps the cattle, placed by themselves, exposed and without sufficient shelter during feeding in winter months, in wretched hovels unfit for the purposes for which they are required.

I have also seen the stable and byres, with, perhaps, one or two hovels placed together, and the barn and straw-house in quite a different part, or at the other side of the stackyard, with a road running between them and the stables, and probably a more modern cart-shed, with a granary above it, in some distant position, and in some cases the granary is placed above the farm-house at a considerable distance, so that the corn had to be carted to it from the barn.

And with regard to the stables and byres, neither light, ventilation, nor drainage, was ever considered, which are now known to be so essential to the health and constitution of the horses and cattle.

This is but a brief description of this class of buildings, and which might be treated upon at greater length, but I think sufficient to show the absurd manner in which the business of a farmer was carried on, and the slight regard which was paid to the comfort and convenience of the stock as well as the oversight in not providing the means for saving of labour in attending upon them.

From the bad arrangement of such steadings, whatsoever new buildings may be required to increase the accommodation, there is little chance of being able to design them to advantage, or to make a suitable and necessary improvement either in the plan, the accommodation, or the site; therefore, in such instances as those which I have already described, and when they are in a dilapidated state, I consider it the cheapest and best plan to have them taken down and have new buildings erected in a modern style, and on a suitable and convenient site.

During the last few years agriculture as a

* By Mr. J. E. Watson, architect; read at a Meeting of the Hexham Farmers' Club.

science has made rapid strides in the cultivation and improvement of land, and with the aid of the steam plough and other implements which have been invented, large tracks of land, which formerly lay waste, are now in a productive state, consequently larger crops, as well as greater extent of grazing-land for sheep and cattle, have been obtained. It has, therefore, been found essential and necessary that additional and more convenient accommodation in the farm steading should be obtained for the housing of stock and cattle, as well as for the advantage of both landlord and tenant, by the erection of suitable and well-arranged buildings, totally different from the inconvenient and unsuitable erections which have existed for years; and for this purpose different agricultural societies have offered premiums for the best plan and design, and in the year 1861 the Royal Agricultural Society of England, at their exhibition at Leeds, offered a premium of 50*l.* for the best-arranged plan, and in that competition I had the honour of gaining the first prize. The plan now exhibited is almost a correct copy, and which I intend taking as my model in giving a description in this paper.

The first thing to be considered is the site, and in choosing this for a new building I am of opinion that it ought to be as near the centre of the farm as possible, this being the proper position for convenience. Keeping in view that it be of easy access by sufficient and good roads, that it should be a dry situation, and easily drained by taking away both the day water and the water from the spouts, as well as the drainage of the liquid manure into the tanks, and also that it should be capable of affording a good and sufficient supply of water; not to be too much exposed, but in a sufficiently sheltered position; free from the faults described in the sites of old buildings, and to keep in view that the folds always face the south, so that the cattle may be sheltered and have the advantage of the warmth of the sun. By attending to these points, not only is expense saved, as less excavation is required, less labour in laying the drains and foundations, and probably less expense in the cartage of the materials, but also additional comfort and convenience may be obtained.

In designing farm buildings I have always considered compactness and symmetry the great elements of composition, by placing the parts which depend upon each other as near together as possible, and removing to a separate place the buildings in which no stock is housed, also to provide ample means for sufficient light and ventilation.

The designing and arrangement of farm buildings are generally open to a deal of criticism and contention, perhaps more so than any other class of buildings; for in various parts of the country different systems of farming are adopted, consequently contrary opinions are entertained, and even in the same locality sometimes there exists a difference of opinion as to the arrangements of the steading and the methods of rearing and feeding of stock, some preferring stall feeding, some in favour of large folds, others in favour of small folds, to contain four or five cattle each; some are in favour of open folds, with the feeding-cribs covered over with sheds, to protect the cattle in wet weather; whilst some are in favour of the folds being entirely covered in, and which system seems to be advancing and gaining ground. I have also known in some cases objections made to liquid-manure tanks; whereas others are favourable to them.

As improvements in agriculture continue to advance, suitable and improved buildings will be still more required, and no doubt many of these differences of opinion will in course of time cease to exist.

I have endeavoured to combat with these differences of opinion as much as possible in making the arrangement, so that it can easily be altered to suit either of the systems just mentioned, and the form I have adopted is simple and compact, easy access being obtained to each portion of the building, without being much exposed in stormy weather, as any one attending the horses, cattle, &c., can do so with comfort and little labour in comparison to that which was required in an old farm-steading, owing to the want of proper arrangement and the isolated position of some of the buildings.

I have always arranged my plans so that the barn and straw-house should occupy a central position, as the straw is an article in constant request; therefore, the buildings, folds, &c., which require the greatest supply, ought to be grouped round it as much as is compatible with the size and extent of the building, and to have a direct communication with the feeding-boxes, stable, byres, hovels, and so on, to enable the supply to be easily kept up, and as much under cover as possible.

The same arrangement applies to the turnip-houses, having passages to the feeding-boxes and sheds; and in some cases I have made these passages sufficiently wide for a tramway, with a suitable truck or wagon to convey the cut turnips to the cattle.

The passages between the covered feeding-sheds are sufficiently wide and spacious to allow of a sufficient quantity of turnips being always stored for the use of cattle in the adjoining folds.

The granaries are above the hovels, for the sake of ventilation, extending each way right and left so as to store different kinds of corn, and having a direct communication with the under and upper barns, as well as with each other, the straw-house being in the centre, the full height of both stories, to afford space and accommodation for packing a large quantity of straw.

It is essential that the barns and granaries ought to be constructed so that they may be kept free from vermin. To accomplish this, I invariably have the bottom or ground floors laid with concrete cement on a foundation of broken stones or bricks, from 6 in. to 9 in. in thickness; the floors of the upper barn and granaries may be done in a similar manner, by laying the floors in the first instance with rough narrow battens, open at the joints to give a key to the cement work; the walls ought also to be plastered up to the window sills with a good thick coat of cement, which, as well as making them proof against vermin, is also a preventive of damp.

The feeding-boxes are placed in close proximity to the folds, and are well ventilated and lighted from the top with squares of rough white glass as skylights, slated in with the slates; a passage is arranged in connexion with the turnip-house for feeding the cattle; the doors may be hung in two halves in height, so that the upper part may be left open when extra ventilation is required; the division rails are made movable, so that they can be taken out when larger boxes are required.

The feeding-sheds are open, and made sufficiently wide for cattle to feed entirely under cover; the remaining part of the fold is open; but as contrary opinions are still entertained as to the desirability of having the folds covered, it will be seen on reference to the plan that a roof can easily be placed over the open part at a small cost, or the whole may be left open without interfering with the general arrangement.

The stables, byres, &c., are placed at right angles to and at the end of the hovels, in such a position that they can without much labour be supplied with straw and fodder; the manure also can easily be thrown into the folds. In some localities there is a difference of opinion as to whether a hay-loft ought to be placed above the stable; some prefer it, and imagine that without it a sufficient quantity of hay cannot be stored; others condemn it entirely. My experience teaches me to think that it is better without, and to keep the stable open to the roof, with proper ventilation at the ridge, and a few glass squares, which can be had for a trifling cost, slated in to give additional light as well as an additional degree of comfort. The Inclosure Commissioners object to lofts above the stables, and request well-ventilated houses for hay attached to each stable. Or in some instances I have introduced a small window at the head of each stall, made with solid frames, and hung on pivots; this not only throws light into the racks and mangers, but when the stables are empty they can be opened, and having windows at the other side, a thorough draught is created, which thoroughly ventilates the stable.

Metal fittings for partitions of stables, also for racks and mangers, are now greatly manufactured, and if some of a cheaper and less expensive style could be adopted, I think they might be used to great advantage in stables of farm steadings.

In fitting up the byres I always recommend the partitions between the cows to be made of stone slabs, about 4 in. in thickness, and the feeding-troughs of fire clay or cement. I find by experience that woodwork soon goes to decay, and that stonework is more easily kept sweet and clean.

The calf-house is in direct communication with the byre, fitted up with pens, and properly lighted and ventilated.

Separate loose boxes are provided for sick horses and cattle, without having any communication with the other parts of the building.

The piggeries are also placed convenient to the folds, so that the manure can easily be put into them. But as metal fittings are now much used they are sometimes fitted up more in connexion with the other parts of the building.

With regard to the floors, which are generally done with rough paving, I am inclined to think that the whole area of the building ought to be laid with concrete cement flooring; that for the stables, byres, &c., to be well grooved to prevent the horses and cows from slipping, the remainder may be plain; the channels can be formed without the aid of dressed stone, and it would be the means of preventing damp and harbour for vermin; the extra cost would perhaps be something like 2 and 2½ to 1 at the outset; but as no repairs would be required for a considerable length of time compared to what is required for common paving, it would, perhaps, be as economical in the end. I have adopted this method successfully in stables attached to noblemen's and gentlemen's mansions.

Machinery can be fitted up in connexion with a shed and saw-frame for the purpose of cutting gates, railing, &c., which are always required for the use of the farm.

The drains ought to be properly laid, and to communicate with each stable, byres, feeding-sheds, &c., so as to convey the liquid manure into the cesspool. Drains ought also to be laid to convey the rain-water from the roofs to some convenient outlet, for the purpose of keeping the steading always dry.

The superintendent's house, cart-shed, workshops, &c., are placed on the south side of the square, the back wall of which forms an excellent garden wall in connexion with the farmhouse. It will be observed that these buildings, where fires are required, are placed in this range to be as far as possible from the straw, so as to prevent the danger of fire.

Another advantage is, that the superintendent's house being placed at the entrance, no one can have admittance without being seen, and the entrance-gates, as well as the other gates leading to the fields, being locked at night, *makes the place secure, and the superintendent living on the premises can always attend to the horses and cattle, especially when required in cases of necessity.*

Dairy-farms can be constructed on a similar plan, having the byres and the feeding-byres under one roof, similar to what an entirely covered fold would be, having a direct communication with the straw and fodder-house, dairyman's-house, &c.; the stables, cart-shed, with granary above, barn, straw-house, &c., forming a distinct part, but all in connexion with each other.

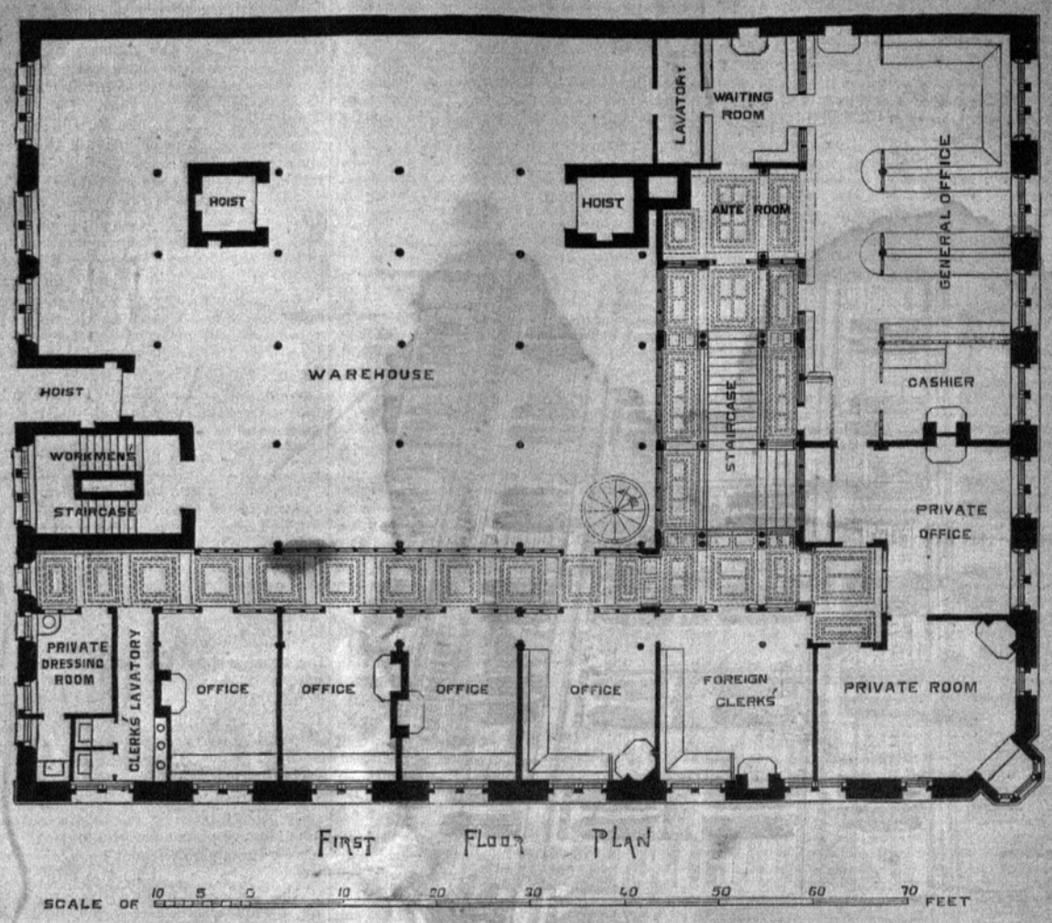
In the erection of farm-buildings, care should be taken that the floors are always kept well up from the surface of the ground, to prevent damp as much as possible.

Not only have improvements taken place in the plan and arrangement of steadings, but likewise more taste is shown in the elevations, and the introduction of some central feature in the form of a simple campanile gives it a neat and picturesque appearance.

The future advantage to be gained is, that the buildings may be enlarged to any necessary extent; in fact, by mere contraction or expansion of dimensions, may be adapted for a farm of any size without in the slightest affecting the design or arrangement. And as it is now considered by several eminent practical agriculturists that in a few years open folds will be considered "as things of the past," a glance at the plans will show that in addition to the roof over the feeding-sheds in the folds, which are at present generally sufficient, how simply another roof may be put over the open part, making it entirely enclosed, or otherwise the folds for the fat cattle may be covered in, and those for the young cattle left open. The hovels, then, not being required, could easily be converted into additional byres, feeding-boxes, or store-rooms, as might be required.

I trust, therefore, that the design I have adopted will be considered not only good in itself, but that it is capable of alteration and adjustment so as to meet the ideas of different people for some years to come, whatsoever their opinions may be as to the arrangement of farm buildings, and the methods of rearing and feeding of cattle.

With regard to the cost of buildings, it is generally understood that the stones are to be had on the estate for the expense of winning



NEW SHIPPING WAREHOUSE, DEANSGATE, MANCHESTER.

only, and that the cartage of the materials is done by the tenant. In such cases the general cost amounts to something like 3d. per cubic foot. No doubt there is a difference with regard to some of the buildings, as a stable, byre, &c., with its fittings and requirements, will cost more than a plain straw-barn or feeding-shed; but, taking the whole into consideration, the price I have mentioned is near to what the cost will be. Of course the advantages of different localities must be taken into consideration.

Perhaps the roofing is a subject which requires most consideration, as the Royal Agricultural Society of England, at their show in Manchester, in 1869, offered premiums for the best description of roofs, and at which I was appointed one of the judges to report upon them. There were models of slate, iron, and felt roofing exhibited; and I cannot explain their merits better than by quoting from our report. "Slate roofing being familiar to all persons, it is unnecessary to describe the mode of construction, which professes no speciality. The cost per square of 100 ft. may be taken at 5*l.* 0s. 10d., or rather over 1s. per foot. The models or examples of galvanized corrugated iron roofs, on wrought-iron framing, were tied together by the ordinary wrought-iron rods, with king-post rod and key. The cost per square was stated to be 3*l.* 18s., or nearly 9½d. per foot, including wall-plates. The felt roofing was in the form of a circle, of which it was stated that the pitch should be 1¼ in. per foot, preserved in its shape by a girder formed of 'bows and strings,' with lattice-work between them, tied by a solid web of timber equal to one-fifth of the span, to give extra strength to the bearings. These lattice-girders are from 8 ft. to 10 ft. apart. On these are purlins, 22 in. apart, covered with a sheet of ½-in. boards in long lengths, and from 9 in. to 15 in. broad, upon which is laid the felt, which is again covered with tar or varnish properly prepared. It was stated that spaces 75 ft. in width had been covered with perfect satisfaction, and that spaces 100 ft. in width could be covered without any intermediate supports. The cost per square is stated to be 1*l.* 12s., or nearly 4d. per foot. The period of durability of slate roofing may be stated to be at least fifty years; that of iron, twenty-two years; and that of felt, eight years; the first requiring no other act of maintenance than ordinary repairs; the second requiring strict attention in painting, to preserve it from the corroding effects of uprising vapours; and the third, in addition to repairs, requiring a coat of tar or prepared varnish every other year, to preserve it from the effects of the sun and weather. The question of economy is not, therefore, determined by the first course, but must have special reference to the periods of duration of each description of material; for, as the roof will require to be replaced at the termination of each period, it is necessary that the principal money first expended should be repaid within such periods. The true state of the case, as respects economy, will be understood, therefore, by comparing the annual amounts per square of ground covered which must be gained to repay the cost within the periods mentioned; and calculating the value of money at 5 per cent. interest, they are as follows:—Slate, 5s. 6d.; iron, 5s. 10d., with painting once in three years; felt, 4s. 11d., with tarring once in two years. Each is liable to ordinary repairs,—iron and slate requiring very little indeed, and felt requiring more."

A NEW WAREHOUSE, DEANSGATE, MANCHESTER.

A new shipping warehouse, covering about 1,000 superficial yards of land, has been recently erected for Messrs. Reiss, Brothers, in Quay-street, Deansgate, a district in which other warehouses will be erected within a few years, as the city is rapidly extending in that direction, and it is intended to open out a new street into Salford by a bridge over the river Irwell, and to widen Deansgate, which is one of the main thoroughfares.

The building consists of eight floors, the lowest two of which are beneath the street level, the sub-basement being devoted to the machinery, viz., boilers, engines, pumps, &c., and the basement-story to the packing-room, with hydraulic presses (which have been executed by Messrs. Norbury & Shaw, engineers, Salford).

The ground-floor is used as a twist-room, and the offices are placed on the first floor. These are handsomely fitted up with desks and counters in wainscot oak. The remaining floors are appropriated to the grey-room, the print-room, the making-up-room, and to stores, respectively.

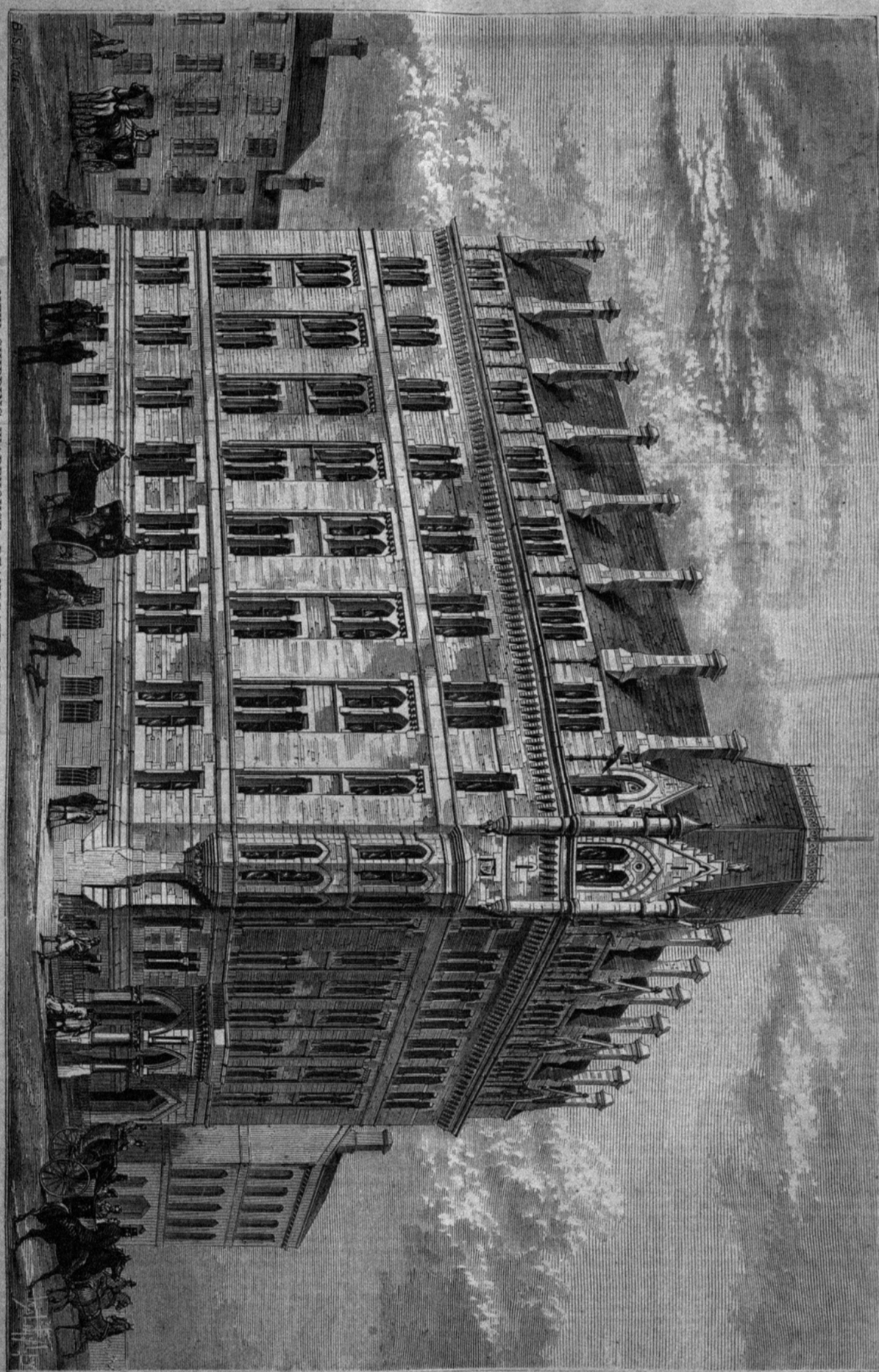
The principal entrance is in Quay-street, with a porch projecting over a sunk area, which affords an unusually good opportunity of lighting the sub-basement story, the area being 6 ft. wide, and lined with white glazed bricks.

The floors are connected, in addition to the principal staircase leading to the offices, by separate stone stairs for the workmen, as well as by three hoists from bottom to top of building, and from the first-floor upwards by a circular wooden staircase.

The exterior is mainly of red brick, with stone dressings; and the angle at junction of Quay and Longworth streets is filled with an oriel window of stone, two stories in height, with projecting base on ground floor.

The building is surrounded on three sides by streets, and there is a loading-place, or hovel, extending the whole depth from Quay-street to the back, with cartway through, and loading-stage in direct communication with the two steam-power hoists.

The architect is Mr. Thos. Worthington, and Messrs. R. Neill & Sons have executed the building under his superintendence.



NEW SHIPPING WAREHOUSE, DEANSGATE, MANCHESTER.—MR. THOMAS WORTHINGTON, ARCHITECT.

GAS FROM WOOD.

THE substance of the following is from "Muspratt," and may help your correspondent, Mr. A. Morse. Dr. Pettenkofer was the first to use gas made from wood to illuminate the city of Munich. It matters little what kind of wood is used, provided it be dry, or as free from water as possible; as the principal chemical constituents of all common woods are nearly alike. The wood is placed in the usual U-shaped retorts, previously made red-hot, and gas is immediately freely given off, and is made to pass through the same arrangement of condenser, scrubbers, and lime-purifiers, as for coal gas; but as wood contains no sulphur, the heat of the retort is lower than for coal; and as it is given off more freely, it is sooner done, and in about a quarter the time required for coal. Liebig and Steinheil give the illuminating power of this gas as one-sixth greater than coal gas. The tar is more abundant and the charcoal more valuable than the coke made by the coal process. The charcoal when drawn from the retort is cooled with wet sand. E. G.

COMPENSATION CASE AT PENZANCE.

IN the case of Mr. William Fox, of Penzance, against the Local Board of the same place, the under-sheriff of the county sat at the Guildhall, Penzance, to assess the compensation to be paid for a piece of street frontage required at the north-east corner of Albert-street to widen and improve the same.

Mr. Trythall, for the claimant, said he wished to point out that the piece of land in question had a 40-ft. frontage in Market-jew-street and a 41-ft. frontage in Albert-street. The piece required by the Local Board was 26 ft. deep at its widest part, and altogether they required 730 ft. of Mr. Fox's frontage. In May, 1869, the Board offered 100*l.*, which was refused; in January, 1871, Mr. Fox offered to take 400*l.*

Evidence for the claimant having been given, Mr. T. Cornish, for the Local Board, said this was the first case of the kind in Penzance, and the second, he believed, in the county, in which the Local Board of Health for the purpose of effecting a public improvement restricted a man from building, but offered him compensation. They bid for this very property 500*l.* at a public sale, but Mr. Fox secured it for 525*l.* They offered him 1,860*l.* for the whole of his rights in the neighbourhood. And when they came to deal for this particular corner they tendered him a sum which they deemed adequate, and in fixing which they were guided by several other similar compensations. Having smartly criticised valuations given, of 15*s.* and 1*l.* a foot, Mr. Cornish gave several precedents for the purchase and sale of frontage in Penzance. 100*l.* was an ample sum for the piece of ground now sought, and 400*l.* an unreasonable amount.

The Sheriff very carefully summed up, commenting on the widely divergent views of truthful and estimable judges of property as to its value; and the jury, after a deliberation of quite an hour, gave an assessment of 300*l.*, —250*l.* for the land and 50*l.* for consequential damages.

CHURCH-BUILDING NEWS.

Stradbroke.—The restoration of the spacious parish church of Stradbroke has just been completed, the work having been carried out by Mr. R. M. Phipson, of Norwich and Ipswich, architect, and the building has been re-opened. At the same time the row of wretched cottages —which formerly stood to the south of the churchyard, blocking out the view of the church from the street—have been bought by the parish and pulled down, the ground on which they stood being thrown into the churchyard, round which an iron palisading, with stone and flint piers at the gateways to the west and the south, has been placed. The works the architect recommended were of a very comprehensive character, and have been carried out to the letter. The open oak roof of the nave had suffered less than any other part of the church, and has been restored in all its details according to the original framework, the rotten beams, purlins, rafters, &c., being replaced in oak of exactly the same size and mouldings. The roofs of the north and south aisles were too far gone for repair, and entirely new roofs of pitch pine, moulded and carved, with ornamented spandrels and carved stone corbels, have been put up. The north chancel aisle has a similar new roof, but the south chancel aisle was in a better state of preservation, and required simply restoration. The ceiled chancel roof turned out to be even worse than Mr. Phipson had anticipated, and an entirely new roof has been put up. This roof is in the Decorated style. The nave and chancel roofs are covered with green slates, and those of the aisles with lead. The clearstory of the nave has four clustered two-light windows in the north, and the same number in the south, walls, with one two-light single window at each end; these were in a very decayed state, and have been almost re-made, the walls being re-faced with flint. The chancel arch, a considerable portion of which was debased brickwork, has been reformed by a moulded arch, with stone shafts, caps, and bases. The stonework of the windows throughout the church has been restored, and the west gallery has been cleared away. The walls of the interior have been relieved from their coating of plaster, and have been cemented and stuccoed. The square pews have all been swept away, and the whole church re-seated with oak open benching, the nave and aisles having square ends, on the panels of which is executed tracery work varying in pattern. The chancel benches have carved poppy-heads representing chiefly natural foliage. The west window has been filled with stained glass of Geometrical design, by O'Connor. A new panelled ceiling has been put under the belfry floor of the tower, and the circular stairs leading to the belfry have been repaired. All the doors are of oak, with ornamented wrought-iron hinges, handles, locks, &c. The passages are all paved with red and buff tiles. The church is warmed by Boulton's heating apparatus. The south porch was a large semi-modern excrescence, mean in the extreme, and was condemned. In its place is a new porch with hammered flint facings and carved stone doorway and parapets. The old north porch has received attention. In many places the outside flint work of the walls was bad or had been made up with bricks, and in all these places it has been replaced, and the buttresses, quoins, copings, crosses, parapets, gables, &c., have all been restored, and, in fact, the whole exterior made good. The belfry windows formerly had wooden louvres, which have been taken out, and, the stonework of the windows having been restored, new slate louvres have been inserted. The whole was carried out by Mr. Grimwood, builder, of Weybread. Mr. H. Vine, Eye, has done the mason's work; the superintendence of the bricklaying portion of the work was entrusted to Mr. Grimwood's foreman, Mr. G. Bullen; and Mr. Gibson, Fressingfield, did the glazing. The total outlay, after allowing for old lead and other materials, will amount to nearly 3,500*l.* The only thing that remains to be done is to put in a new five-light east window, the present four-light one not being large enough for the restored church, and to supply a reredos, and we understand this addition is in contemplation. At present there is no organ, but a fund to purchase one has been commenced.

Chichester.—An addition has recently been made to the interior of the church of St. Peter-the-Great, by the erection of a new reredos, a gift from the vicar and Mrs. Gruggen. The reredos, which is principally of stone, is divided into three compartments, separated by short columns of coloured marble with carved capitals, supporting four angels, who carry in their hands the crown of thorns, the instruments of scourging, the spears, the dice, the cross, and the shroud, all emblems of the Passion. The subject of the sculpture in the central compartment is Our Lord in the act of breaking bread with the two disciples at Emmaus. It is said to be intended to place a new reredos in the church of All Saints, to be composed of encaustic tiles, and that it is also in contemplation to pave the east end of the church, and erect three stone steps for the communion-table.

Westbromich.—The memorial stone of the restored parish church of All Saints has been laid. The contractors to the new building are Messrs. Burkitt & Co., of Wolverhampton; and Mr. Somers Clarke, jun., of London, is the architect. The contract is for 6,300*l.*, towards which 3,000*l.* have been already obtained. The church, when completed, will seat about 700 persons. The style of architecture will be that of the fourteenth century. The congregation will be provided with chairs until the funds will be sufficient for pews. Memorial windows will be put in the west end of the church by Colonel Bagnall. The Dartmouth memorial window will be restored, and another memorial window will be placed in St. Chad's Chapel by the vicar's brother, Mr. Charles Willett. The cost of the chancel has been defrayed by the Earl of Dartmouth, and the sacristy by the vicar. The bells will also be re-hung, at the cost of Colonel Bagnall.

Halifax.—At the annual meeting of the Ripon Diocesan Church Building Society, at Leeds, a grant of 370*l.* was made towards the erection of the much-needed church of St. Augustine. The plans have been prepared by Mr. Coad, of London. The edifice will consist of a nave of five bays, transepts, and chancel, with apsidal termination. The style is Early Decorated, and the church will possess one or two special features not to be found in any other church in Halifax; for example, the apse, with its five long two-light windows, and the lofty clearstory windows. The nave will be 34 ft. long, and the chancel will be ascended by three steps, three others leading to the sacrarium. The total accommodation will be for 784 persons.

Lakenheath.—At a meeting recently held as to the repair of the parish church it was resolved, at the suggestion of the Archdeacon, that the architect for the archdeaconry shall be called in, who will make a survey of the building without charge, on condition of his being selected for architect, in case any repairs were really set about.

Birkenhead.—Bebington parish church has been re-opened, after being closed nine months for re-seating and other improvements. In the present restoration the fabric has not been altered in any way, the works being confined to cleaning the interior thoroughly, and rendering it dry by asphalting the whole of the area under the floors, re-tiling, heating and ventilating, and seating throughout with open benches of oak, and constructing a choir and chancel by screening between the piers of the eastern portion of the interior. The fittings of the choir and chancel are of carved oakwork, in keeping with the few portions of ancient work which are in the church. All the ancient outwork has been conserved and incorporated in the new fittings. The windows have been re-glazed with beaded glass. The floors have been renewed, and are laid with tiles and marbles. The total cost of the restoration of the edifice will be about 2,600*l.*, of which 2,000*l.* will be subscribed by the parishioners generally. The cost of the chancel will be about 500*l.* or 600*l.*, and the rector of the parish has taken upon himself to find the amount.

Chester.—The new Church of St. Thomas, at the end of Parkgate-road, has been consecrated by the Bishop of Chester. The adjacent burial-ground was consecrated at the same time. The new church is erected from designs of Mr. Gilbert Scott; the builder being Mr. Roberts, of Chester. It is of Early English architecture, the material being red Roman sandstone. The original plan of the architect was calculated to accommodate about 1,000 persons; but some important portions yet remain to be erected, and as far as at present completed only about 520 can be seated. The cost has been about 5,000*l.*, raised by subscription, with the exception of the site, which was given by the Ecclesiastical Commissioners. About half an acre is intended to be devoted to the erection of a school, at some future time, in connexion with the church. The new church is a chapel-of-ease to St. Oswald's. Two more bays, the north porch, and the tower have yet to be added. The interior is floored with Minton's encaustic tiles. The present seats are only temporary chairs, of the same character with which the public are familiar, in the nave of the cathedral; two covered chairs in the chancel were given by Mr. Lamont.

Croydon.—The new church of St. Luke, Woodside, has been consecrated by Dr. Parry, the Suffragan Bishop of Dover. The new edifice is built in the Early English style, and was erected at a total cost of 1,130*l.*, raised by voluntary subscriptions. The architect was Mr. W. V. Arnold, who gave his services gratuitously, the builder being Mr. T. J. Witt, of Dingwall-road. The church is capable of seating 300 persons, and 100 of the seats will be free and unappropriated. St. Luke's is the first church erected at Woodside.

Prittlewell.—The church has been re-opened by the bishop of the diocese, after having undergone partial restoration, during which many interesting architectural features have been disclosed. There have been five stained-glass windows added. There remains much to be done, as the whole of the windows in the south side are still in a state of decay, and the interior has yet to be re-seated. A new roof has been erected throughout, in English oak. In the nave and aisle it is plastered between the timbers, and in the chancel boarded. The chancel is further enriched with carved angels as finials of hammer-beams. The roofs of the nave and chancel are covered with green Westmoreland slates, with Bath stone ridging, and the roof of the aisle is covered with lead. The internal walls have had all the plaster stripped off and have been newly pointed, thus showing all the ancient work, notably some very early Norman windows in the arcade between the nave and the aisle, evidently belonging to the original church on the site. The flooring has been com-

pleted, boarded floors being laid and the passages paved, the chancel in tiles and the nave and aisle in black and red Poole tiles. The east window represents the four evangelists, with their respective emblems beneath, by Mr. A. Gibbs, of London. The west window is also by Mr. Gibbs. It is a three-light, representing SS. John the Baptist (centre), Peter, and Paul. The north window of the chancel (three-light) is by Messrs. Clayton & Bell. The subject is the Presentation in the Temple. There is a small two-light window over the east window. The subject is the Annunciation. This window is the work of and presented by Mr. A. Gibbs. The south window of the chancel, within the sacrarium, by Mr. A. Gibbs, represents Christ found amid the Doctors in the Temple. The church is warmed by hot-air apparatus, by Messrs. Haden, Trowbridge, Wiltshire. The cost of work executed is about 3,000*l.* That which remains to be done will cost about 1,250*l.*, exclusive of the tower (about 500*l.* more). The church bells (six in number) have been restored—five recast by Messrs. Stainbank, Whitechapel—and hung in a frame for eight, with the view of adding two others eventually. The cost of this is about 200*l.*, and 30*l.* has been expended in making the organ as efficient as possible. The architect is Mr. Ewan Christian, of London; and the contractor, Mr. Walter Avis, Hastings.

Lindley.—The corner-stone of the chancel to the parish church, Lindley, has been laid. At the north side of the chancel, which is in process of erection, there will be an organ-chamber, and on the south side ministers' and choir vestry. The chancel will be 25 ft. long and 21 ft. wide. A tracery stained-glass window, by Ward & Hughes, of London,—subject, the Ascension,—of the value of nearly 400*l.*, will be placed in the east end of the chancel by Mr. H. B. Taylor. The architect is Mr. J. N. Crofts, Liverpool; contractors for mason work, Messrs. J. Royston & Sons, Lindley; joiners, R. Whiteley & Nephew; plasterer, E. Jowitt; plumber, H. Garton; painter, W. T. Earnshaw. The estimated cost is 1,500*l.* A new organ by Messrs. Conacher, of Huddersfield, is in course of erection, making altogether an outlay of 2,000*l.*, towards which about 1,500*l.* have been already raised.

Catterick.—The parish church has been re-opened after restoration, at a cost of 2,000*l.* The alterations and improvements are as follow:—A new clearstory and roof of ancient design; a new organ, built by Messrs. Forster & Andrews, of Hull; oak reredos and altar-rails (presents); new vestry, with heating-chamber underneath, and porch; windows reglazed with cathedral glass; new choir-stalls, prayer-desk, and stone pulpit (the gifts of the Booth family); new chancel-floor of encaustic tiles, given by the vicar; brass standards (a present), &c.

Tamworth.—St. Paul's Church, Dosthill, a village situated about three miles from Tamworth, in the parish of Kingsbury, has been consecrated. Great efforts have been made to supersede the old building, which has served as a chapel of ease, and the result has been the erection of a Gothic edifice, built of the sandstone from the neighbouring quarry at Whateley. The church consists of nave and chancel. In the latter is a stained east window. The building, we believe, was designed by Mr. Holmes, of Birmingham, the work being executed by Mr. Lilly, of Ashby, contractor.

Alvescott.—The parish church has been re-opened after restoration. The old ceiling of the roof has been removed, the floor has been repaved, open varnished pine benches have been substituted for the pews, all the doors have been renewed in English oak, a new pulpit has been substituted for the old one, and the church is heated with a warming apparatus. Among the features of the alterations are the reredos and a new east window. The latter is filled with stained glass from Munich, and has been erected in memory of the Rev. A. Neate, the late rector. These alterations have been carried out from the designs of Mr. Slater, architect, Westminster, by Mr. Plaster, of Bampton. The total cost of the restoration has been between 600*l.* and 700*l.*

Weaverthorpe.—This Late Norman church has been re-opened by the Archbishop of York, but the addition to the churchyard was not consecrated, the enclosure not having been completed. The church, which was closed in August, 1870, has been restored at the sole cost of Sir Tatton Sykes, bart., of Sledmere, being the third church recently built or restored by him; a fourth, at Helperthorpe, being nearly complete, and another, at Luttons Ambo, having been begun. The restoration was placed in the hands of Mr. G. E. Street, R.A., of London, and the work, as at Thexendale and Fimber, has been carried out under the supervision of Mr. R. Hayward, of London, the resident clerk of the works. In the restoration every ancient feature has been preserved, the old walls and windows have been restored, the gables of the nave and chancel have been raised to the pitch of the original church, and the roofs have been covered with lead. The peal of three ancient bells has been re-hung in the tower, to which a leaden roof has been added. Externally, the church presents its old appearance. Internally, the edifice consists of tower, nave, and chancel, with south porch. The three lights of the old east window have been filled with stained glass, by Clayton & Bell, of London, representing the Ascension; and the two-light windows on the north and south side,—and, in fact, all the other windows,—have glass from the same artists. A south one-light window in the chancel has a figure of St. Andrew, and in the nave, upon an ancient corbel in the south pier of the chancel arch, is placed a full-length effigy of St. Andrew, in Caen stone, by Redfern, of London. The windows on the north side of the nave contain figures of St. Mary and Mary Magdalene, and an ancient Norman north door has been opened out. The windows on the south side have figures of St. Peter, St. James, and St. John. In the south-west angle of the nave is placed the old carved Norman font. An iron screen separates the nave from the tower space, which forms a vestry, over which is the belfry. The church is seated with oaken stalls throughout, and the warming is by Porrett's hot-air system. The spaces of nave and chancel are paved with coloured tiles. The pulpit is by Leaver, of Maidenhead; the screen by Parker, of London. The builder was Mr. Booth, of London; and the decorators of the ribs and roof are Messrs. Bell & Arnold, of London.

Oxford.—St. Frideswide's Church has been opened and consecrated. The foundation-stone was laid on the 13th of December, 1870, and lack of funds compelled the cessation from the work for a time last summer. The site upon which the new church stands is to the left of the Botley turnpike-road, just beyond the bridge which forms the main entrance to New Osney. The land is rather more than an acre in extent. With respect to the interior, we may state that benches have not yet been provided, chairs being used throughout the nave. The choir has, however, been fitted up with permanent benches. The floor within the apse is laid with encaustic tiles, relieved by freestone steps. The floor of the chancel is also laid with encaustic tiles. As the space is now allotted there is accommodation for about 280. Not only has the building of the tower been left, but also the benches and the interior stone carving. Messrs. Honour & Castle were the contractors. The original contract, as taken by them, was 3,990*l.*, but, owing to the lack of funds, not more than about 2,500*l.* have been spent. The architect of the works is Mr. S. S. Teulon, of Westminster.

DISSENTING CHURCH-BUILDING NEWS.

Nantwich.—The foundation-stone of a new Baptist chapel has been laid on a site in Market-street, Nantwich. The building will be in the Gothic style. The width of its frontage is 36 ft., sides 71 ft. It will be built of red patent bricks, and ornamented with white and blue bricks in string-courses, and white stone from Grinsell quarries. There will be projecting gables at each side. The interior will seat about 400 people. There will be one gallery in the front. The fittings are to be made of polished pitch pine, and the pews open seats. The upper portion of the building will form a lecture-room, vestry, and school. The estimated cost of the building and land is upwards of 1,300*l.*, towards which 700*l.* have been already promised. Messrs. Horsfield & Son, of Halifax, are the architects; and Mr. Henry Ray, of Nantwich, is the builder.

Edgeley.—The foundation-stone of the third Wesleyan chapel in succession on the same plot of land in Edgeley has been laid. The Italian style of architecture has been adopted in the design. The building will be of brick, with stone dressings. The principal feature in the front is a Corinthian portico of four columns, surmounted by a balustrade. Within the portico is the principal entrance to the chapel. On each side of the portico are two tiers of windows, giving light to the staircases. The length of the building internally is 72 ft., and the breadth 41 ft. 6 in. At the rear of the building, on the ground floor, a large class-room, suitable for week-night preaching and prayer-meetings, and a minister's vestry and a staircase for the children are arranged. The gallery is the whole length of the chapel, extending over the vestibule in front and class-room, &c., at the back. The entire height of the chapel from the ground-floor to the ceiling is 31 ft. The building will be well lighted and ventilated. The accommodation is for 750 persons. The total cost of the building will be about 3,000*l.* Mr. P. Hodkinson, of Hulme, Manchester, is the contractor for the whole of the work. The chapel was designed by, and will be carried out under the superintendence of, Messrs. Hill & Swann, architects, Leeds and Sheffield.

Fartown, Pudsey.—The foundation-stone of a new chapel for the Methodist New Connexion has been laid at Fartown, Pudsey. The estimated cost of the new building is 1,650*l.* It is to furnish sittings for 450 people. Messrs. Nelson, of Leeds, are the architects, the style being Italian. It will have a gallery at one end and an organ and choir recess at the other, and two vestries, with other offices, will be provided. Messrs. W. Wood & Son, of Pudsey, and Mr. E. Boys, of Pudsey, have entered into contracts to do the main portion of the work.

Gateshead.—The memorial-stone of a new Congregational Church, situated in Hexham-road, Gateshead, has been laid. The principal feature of the building, the walls of which are to be of local wallstone, the dressings being ashlar, also from a local quarry, is the tower and spire, which rise to a height of 113 ft. from the ground to the top of the vane. The church is lighted in the front by a four-light window with a traceried head, on each side by lofty two-light windows of a similar character, and at the back by a rose-window. These will be all filled with Hartley's cathedral tinted glass, in lead quarries, with margins of coloured glass. Entrance is obtained by three doorways, one in the centre for the ground-floor of the church, and one on each side communicating directly with the gallery staircases. Internally the church is divided into nave and aisles by arcades of iron pillars supporting wooden arches, from which springs a wagon-headed roof. A narrow gallery runs along each side of the building and extends on the front to a much greater depth, being carried over the front vestibule. The seats, which will provide accommodation for 800 adults, are all open, with slanting backs, and are of stained deal. The passages are to be paved with mosaic tiles. The warming is to be by Lewis's patent warm-air apparatus, and the lighting by gas pendants and brackets. A special feature in the design is a ladies' and deacons' room, provided in an annexe communicating with the tower entrance. The schools externally will be built of stone like the church, and will accommodate 500 children. They comprise, on ground-floor, infants' school and five class-rooms, and on first-floor a library and a large school-room, which latter, when arranged, as intended, for lectures, will accommodate 400 adults. It will have a gallery at one end, and a curved brace roof. The heating and lighting will be on the same principles as the church, special attention being paid to ventilation. The cost of the church is estimated at 3,360*l.*, that of the school at 1,000*l.* The contractors are:—For the whole of the builders' work, Mr. J. A. M'Murtrie, of Gateshead; Mr. G. Wilson, of Leeds, for the glaziers' work; Mr. J. W. Lewis, of Newcastle, for the heating apparatus; and Mr. Dovey, of Manchester, for the ornamental metal work. The whole is designed and carried out under the superintendence of the architect, Mr. J. B. Pritchett, of Darlington.

Handforth.—The corner-stone of a new Wesleyan chapel has been laid at Handforth. The building (which will be of brick, with stone dressings, and in the Gothic style of architecture) will accommodate 250. It will cost about 1,600*l.* The architect is Mr. Sutton, of Southport.

Saltaire.—The corner stone of a new Primitive Methodist Chapel and Schools, in course of erection about midway between Shipley and Saltaire, on the Bingley-road, has been laid. Sir Titus Salt, bart., in consequence of a severe attack of gout, was unable to be present. The building is to be erected from the designs of Messrs. John Kirk & Sons, of Huddersfield and Dewsbury, architects. The basement floor will contain school-room, lecture-room, infant class-rooms, three small class-rooms, and kitchen. There will also be separate yards on each side of

the building for boys and girls. There will be spacious staircases communicating with the ground floor and gallery of the chapel. The ground floor will contain large and small vestries, lavatories, the main body of the chapel, and two side wings, containing entrance, vestibules, and staircases to galleries and schools. These entrances will be approached by bold flights of stone steps from Bingley-road. The gallery will extend round the entire chapel, and will be supported on ornamental cast-iron columns, the gallery front being moulded with panels filled in with ornamental perforated cast-iron work on scarlet ground. The body of the chapel and gallery will contain sitting accommodation for 1,000 persons. The pewing and other woodwork will be of red deal, stained and varnished. The chapel will be lighted by means of ornamental sunlights suspended from the ceiling, and will be warmed by hot water on the best principle. The style of architecture will be Italian, freely treated, the principal front being towards Bingley-road, from which it will be separated, at a distance of eleven yards, by a low boundary wall, surmounted by ornamental iron palisading, with gates of similar design to each of the three entrances. The whole of the building will be constructed of hammer-dressed wallstones and ashlar dressings from the local quarries. Its entire cost will be about 4,500*l.* The whole of the works are being carried out under the immediate superintendence of the architects, Messrs. Kirk; the clerk of the works being Mr. Walsh, of Shipley. The contractors for the various works are:—Masons' work, Mr. G. Horsfall, Heckmondwike; joiners, Messrs. Deacon & Whitaker, Shipley; plumbers, Messrs. S. Rushworth & Sons, Shipley; slater, Mr. E. Thornton, Shipley; plasterers, Messrs. J. Wilkes & Son, Baildon; painter, Mr. G. L. Smith, Windhill.

Halifax.—The chief stones of Holywell Green new Congregational Church have been laid. The site of the new church, now in course of erection, at the sole cost of Messrs. John Shaw & Sons, is on one of the prominent hills of Stainland, and the spire will be seen for miles round. The design is the Geometrical style of Gothic architecture, and comprises nave, 74 ft. by 28 ft. 6 in.; aisles, 58 ft. 6 in. by 10 ft. 3 in; choir, 18 ft. by 14 ft. 3 in.; two vestries in the rear, and two porches in front, formed by the tower on one side, and the staircase on the other. The nave is divided from the aisles by arcades of five arches each, which will be of moulded stone, supported by polished granite pillars, with ornamental foliage caps of stone. The roof will be wagon-headed in form, having moulded braces and purlines of pitch pine, with plastered ceiling between. The present accommodation on ground floor, and in an end gallery to be constructed in the recess between the tower and staircase, is designed for 600, but with the addition of transepts, for which the building is being specially arranged, 400 more sittings can be provided at any future time, bringing the total up to 1,000 sittings. The seats are designed to be 34 in. from back to back, and 20 in. to be allowed to each individual. They are to be open, with slanting backs, and fitted up with book and hat boards, and all of pitch pine varnished. The pulpit will be of Caen stone, with marble pillars. The windows will all be glazed with stained and painted glass. The lobbies and margins of the passages will be paved with mosaic tiles. The warming of the church will be effected by Lewis's patent warm-air apparatus, and the vestries by the patent warm-air chamber fireplaces of the same maker. Externally, the gable end to the road contains two two-light windows under the gallery with a large five-light window over them, occupying the gable, which will be surmounted by a stone cross. At one angle stands the tower, the ground floor of which forms one of the vestibules to the church, entered by a door with moulded arch, supported by granite columns. Over the door is a two-light window lighting the ringing-room; in the next stage is the clock and top or belfry stage, being filled by moulded two-light belfry windows. From an arcaded cornice springs a spire, surmounted by a vane rising to the height of 120 ft. from the ground. The spire is decorated at the angles by ornamental pinnacles forming the "broaches," and is relieved by moulded "lucerne" lights. At the angle opposite the tower is a second entrance lobby, containing the staircase to the children's gallery. This building is surmounted by an octagonal slated spiral roof. A connexion is designed between the school and this lobby by a covered and glazed corridor. Each side of the church is designed with three two-light windows, surmounted by gables, the larger two being designed so that they can be extended to form the gables of transepts, when an enlargement of the church becomes necessary. The choir has at the sides simple windows lighting the vestries, and at the back a rose window, which will be seen above the organ. The building is being erected of local stone, which is said to be among the best in the kingdom, the brown being used for the outside chiselled; the white cleansed for the inside. The architect is Mr. J. P. Pritchett, of Darlington; the clerk of works Mr. Dowgill; and the contractors for masons' work Messrs. B. Edwards & Son, Holywell Green; slating, Messrs. Hill & Nelson, Batley; plastering, Messrs. Bancroft & Son, Halifax; joiners' work, Mr. Joseph Hodgson, Holywell Green; plumbing, Mr. J. Aspinall, Elland; glazing, Mr. W. I. Booer, Leeds; painting, Messrs. E. & B. Briggs, Low Moor; iron and brass work, Mr. J. Dovey, Manchester; granite and marble work, Messrs. Fenning, London; carving, Messrs. Walker, Emley, & Beall, Gateshead; warming, Mr. J. W. Lewis, Newcastle-on-Tyne. The cost will be about 6,000*l.*

Tattenhall.—The new Congregational church has been opened for divine service. It is Gothic in style, and built of the white stone of the neighbourhood, except the carved portions, for which stone from the Grinshill Quarry has been used. The entire length is 53 ft. 10 in. by 31 ft. 6 in., while the height from the basement to the eaves is 15 ft. 6 in., and from the basement to the ridge of the high-pitched roof, 38 ft. For the roof, Bangor countess slates, with green bands, have been employed, and fancy ridge-tiles. The front elevation to the street is a gabled one, with an entrance-porch and vestibule on each side, the outer porches being ornamented with small octagonal buttresses and the doors with columns on either side, and carved capitals and bases. Between the porches is a four-light window, with circular traceried head and moulded arch, and extending in each direction from the window-sill to the porches are carved and moulded panels. On each side of the building there are five windows, three two-lights and two three-lights, with cusped trefoil heads and carved capitals and bases, and on each side one of the three-light windows is used for the porch, having two lights in that and one in the chapel. The windows are glazed with cathedral-tinted rolled glass, with stained borders. The roof is ceiled, but so as to show the four principals, which rest on moulded corbels, below each of which are gas-jets. The whole of the woodwork is of pitch-pine, stained and varnished, the most prominent part of that being the minister's pulpit, or rather desk, which stands on a raised platform in front of a recessed moulded arch, with carved capitals and pillars. The building is warmed by one of Porrit's hot-air stoves, lighted by gas, and ventilated by circular apertures in the ceiling, a current of air passing between that and the roof from the louvres near the apices of the gables, and the front gable is terminated by a stone finial. The architect was Mr. T. M. Lockwood, and the builder, Mr. Charles Holland, of Chester. It was estimated that the cost of the chapel would be 1,350*l.*, and that, together with the adaptation of the old chapel to school purposes and a manse for the minister, the total cost would be 2,200*l.*

SCHOOL-BUILDING NEWS.

Stafford.—A meeting, presided over by the Earl of Shrewsbury, has been held at Stafford, to consider what means should be adopted for carrying out a proposal to build new schools in Rowley-street for the parish of Christ Church. Lord Shrewsbury said that, for one, he thought the subscriptions should not be returned, and he should be very happy to increase his own gift as a *quasi*-memorial of his late friend the vicar. They would require 483*l.* 16s. 3d. to complete the undertaking. He had been thinking how he could help in the matter. Whit-Monday was a shoemakers' holiday in Stafford, and he should have much pleasure in placing his grounds at Ingestre at the disposal of a committee for the holding on that day of a *fête* at which intoxicating drink should, as at Alton, be served out at intervals only. In that way enjoyment might be afforded to the people of Stafford, and an addition be made to the Christ Church School fund. The proposal was heartily received, and the Mayor thanked his Lordship for his kind offer. His Worship expressed the opinion that larger schools than those contemplated should be built. A committee, consisting of the borough members, the Mayor, and other gentlemen, was appointed to give effect to Lord Shrewsbury's offer.

Shanklin.—The new parochial schools at Shanklin, the foundation-stone of which was laid in August last, have been opened. The buildings comprise three large and lofty schoolrooms, intended to accommodate 100 boys in the upper room, 120 infants in the centre room, and 100 girls in the lower room. In connexion with these are lavatories and other rooms. There is a large playground, in one corner of which is situated a commodious house for the master.

West Mersea.—The newly-erected schoolhouse at West Mersea has been opened. The school and master's residence are erected with red bricks, jointed with dark mortar, and Bath-stone dressings. All the windows and doorways are of Bath stone, and the windows are glazed with tinted cathedral glass. The interiors of the school and class-room are arranged in accordance with the requirements of the Committee of Council on Education. The roof is ceiled under the collar-beams, the exposed timbers and all the joiner's work being wrought, stained and varnished. An abundant supply of pure water has been procured from a well sunk near to the school, and is conveyed to the several offices by a force-pump. The playgrounds and master's garden are divided by rustic fences, and the whole site is enclosed by an ornamental brick wall. The school is entered by a porch at each end for boys and girls. The schoolroom is 40 ft. in length, and 18 ft. in width; and the class-room is 24 ft. by 16 ft., and 11 ft. in height to the wall-plates. The work has been executed by Mr. Alfred Diss, builder, under the superintendence of Mr. Horace Darken, architect, Colchester.

Faringdon.—The committee of the British School are about to erect new school buildings near the entrance to the town from Lechlade, the present school being found inadequate to the number of children attending; and a sum of 600*l.* has been raised towards this object. The contract for the erection of the new school buildings has been taken by Mr. Williams, builder, Abingdon.

Pendleton.—St. Thomas's Schools, Hankinson-street, Pendleton, have been opened for school work. The plan comprises girls' schoolroom, 60 ft. by 30 ft.; little boys' schoolroom, 43 ft. by 24 ft.; infants' schoolroom, 35 ft. by 19 ft; class-room, boiler-room, store-room for spare forms, &c.; three porches, latrines, &c. Attached is a good-sized master's house. The walls are faced with stock bricks. The latrines are entered under cover from the schoolrooms, and have a constant current of air passing through them, securing thorough ventilation. The heads of the windows are filled with a floriated kind of stained glass, in three or four tints. The large schoolroom will be used for Sunday services, the little boys' school forming a *quasi*-chancel. The accommodation is for about 430 day-scholars. The work has been carried out by the builder, Mr. James Birch, under the superintendence of the architects, Messrs. Medland & Henry Taylor, of Manchester.

STAINED GLASS.

St. Martin's, Scarborough.—Miss Mary Craven is giving three new stained-glass windows to this church, as an expression on her part of loyalty and devotion to the royal family. One will be a thank-offering for the recovery of the Prince of Wales, and the adjoining window will be given as a tribute of respect to the Princess. The third window will be given in token of loyal and devoted attachment to the Queen. This latter will be a companion to the window of the "Three Kings," which Miss Craven gave in memory of the Prince Corsort nine years ago. The Archbishop of York has given his sanction to Miss Craven's intention. When these windows are placed, every window in St. Martin's will be filled with stained glass with the exception of one, and that we believe is also promised.

St. Michael's, Cambridge.—Messrs. Hardman, of Birmingham, have completed a memorial window for the east end of this church. The window has been so coloured as to admit as much light as possible. The subjects illustrated are:—The Expulsion of Adam and Eve from Paradise; our Saviour, with the gloria, surrounded by angels; the Sacrifice of Isaac; St. Michael and Diabolus arguing over the Body of Moses; the Angel slaying the First-born in Egypt; St.

Michael and the Dragon; the Slaying in the Assyrian Camp; the Angel appearing to Joshua; the Fiery Furnace; and Daniel in the Lions' Den. At the top are six angels. The whole has been adapted to the fifteenth-century architecture of the window. The cost was 500*l.*, which was defrayed by subscriptions. The chancel is being altered and improved from plans by Mr. Gilbert Scott, but although the work is not nearly completed, the church has been re-opened.

All Saints', Wrington.—A window of stained glass, to the memory of the late Rev. John Vane, for forty-two years rector of Wrington, has just been placed in the south side of this church. The work has been executed by Messrs. Clayton & Bell, of London, at a cost of about 150*l.*, which sum was raised by voluntary subscriptions. The top portion of the window represents St. James, St. Thomas, St. Andrew, and other saints. The centre represents the Raising of Jairus's Daughter, the Raising of the Widow's Son, and Christ Blessing Little Children; while the lower lights contain representations of the Nativity, the Presentation in the Temple, and the Flight into Egypt.

St. Andrew's, Whittlesey.—The east window of this church has been put in, and gives an appropriate finish to that ancient structure. The window is "Flamboyant:" it has been reduced 18 in. in order to allow room for the reredos erected on the design of Mr. R. R. Rowe, of Cambridge. This, however, is not noticed inside the building, as a still larger part of the window was before hidden by a grotesque, "Belief," &c., executed by some native artist in times gone by. The window is the work of Mr. Constable, of Cambridge.

St. Sidwell's, Exeter.—A stained window has just been placed in this church, to the memory of two sisters, daughters of the late Mr. William Kennaway, of Exeter, who were lost at sea. The window is composed of three lights, the centre representing our Saviour walking on the sea. The side compartments contain two medallions set in tracery, the one representing a cross wrapt in light shining over the sea, and the other a dove bearing an olive-branch above the waters. The whole is the work of Messrs. Mayer & Co., of Munich, its erection being superintended by Mr. Blake, of Exeter.

Trinity, Stockton.—A stained glass window has been placed in this church, by Mr. Joseph Wron, of Boston (formerly of Stockton), in memory of his mother. The stained glass was manufactured by Messrs. Mayer & Co., of Munich and London, and consists of four lights, which represent eighteen subjects chosen from the life of our Saviour.

Dudley Parish Church.—A memorial window for this church to the late Dr. Browne, has just been completed. It is in the style of the fifteenth century, and consists of three lights. The subject chosen for illustration is the Resurrection of our Lord. It was by Messrs. Hardman & Co.

Warbleton Church.—The large east window of this church has just been filled with stained glass. The work, which was completed for Easter Day, has been executed, both as to colour and design, by Messrs. Horwood, Brothers, of Frome, Somerset, and represents the four scenes of—1. "The Agony in the Garden." 2. "The Crucifixion." 3. "The taking down from the Cross." 4. "The Burial."

Highclere New Church.—A stained-glass window has been inserted at the western end of this church, as a memorial of Mr. Herbert, whose murder by Greek brigands produced such a painful sensation throughout the country two years since. Below the window a brass plate has been fixed, bearing the following inscription:—"To the glory of God and in memory of their friend, Edward Herbert, born 1st Sept., 1837, and murdered by Greeks at Oropos, 21st April, 1870, this window is erected by Fanny, Edith, Eveline, Ogilvy, Alan Herbert, and Henry and Norman Ogilvy."

Holy Trinity Church, Halifax.—The stained glass for a memorial window to the late Rev. Austin Henry Weston, curate at this church, has been placed in its position at the west end. The glass is from the works of Messrs. Ward & Hughes, of London, and the subject is, "Our Lord blessing Little Children."

Earls Barton Church.—Stained glass has recently been placed in the east window of this church by Mr. Edward Thornton, at whose expense the chancel is now being restored. The window is a narrow Early English triplet, each light being filled with five Scriptural subjects, arranged on types and anti-types from the Old and New Testaments. The subjects illustrated go across the window, and commence with—1. The Birth of Isaac foretold; The Annunciation; Samson's Birth foretold. 2. Creation of Adam; Our Lord's Nativity; Birth of St. John the Baptist. 3. Sacrifice of Isaac; Our Lord's Crucifixion; Moses lifting up the Brazen Serpent. 4. Lowering Joseph into the Pit; Our Lord's Resurrection; Jonah cast on the Dry Land. 5. Translation of Enoch; Our Lord's Ascension; Elijah taken to Heaven. The whole of the subjects have white diapered backgrounds. The work was executed by Messrs. Bell & Almond, of London.

Books Received.

How to make a House Healthy and Comfortable. By Henry J. Lanchester. London: F. Harvey, 1872.

If we were to say that a reader of the *Builder* would find in this *brochure* anything he had not seen before, we should say what was not true; but it is necessary to state a truth many times before it will be attended to; and as Mr. Lanchester has set forth succinctly two or three important matters in connexion with fresh air and drainage, his very little book may be usefully circulated. To brighten it up, and end with something like effect, the writer reprints our rhymes, "The New House that Jack built."

The Natural History of the Year. By the late B. B. Woodward, B.A. London: Partridge & Co.

This revised edition of the late Mr. Woodward's pleasant and thoughtful sketch of the history of the months is illustrated by a number of delicate woodcuts from drawings by Mr. Birket Foster and others. It is addressed to the rising generation, and is well calculated to induce an interest in country life, to lead to the study of Natural History, and to open young eyes to what, though around and about them, is often unseen. The cover is a little overdone with gold and colour.

VARIORUM.

The new number of the *Quarterly* contains what must be called a slashing article on the "State of English Architecture." Slashing to right of us, slashing to left of us, slashing in front of us, echoes and thunders. Much of it is our own thunder, with which, of course, we are satisfied: to some of the other thunder we may offer objections or comments if an opportunity occur. The following paragraph will show the tone in which the writer deals with various modern works:—

"The Church of St. James the Less, at Westminster, has been greatly praised for its decorative work, though it really is but a baby house. Its parti-coloured tower is built with polished marbles up among the clouds, and of ungainly brickwork level with the eye. Its preposterous ironwork, designed by an architect, and manufactured by a mechanic, is so disproportioned as to be absurd, and is quite incongruous with the mean walling that it screens. The interior, chequered all over with bits of colour, is not the serious effort of a man, but mere effeminacy and child's play, giving the same wide-mouthed pleasure as a new trick of sleight of hand. The decorations of the roof are for the most part invisible. The mental debasement which we have already referred to has in this and in many other churches shown itself by making it what children would call 'a place for bogies.' There is a great deal of nonsensical scorn of those who object to Gothic work that it is dark and gloomy; but these childish church architects are the cause, and their works are a justification of this, at first sight, very reasonable objection. At St. James's the aisle windows are mere slits in the wall, not to admit daylight evidently, but to show some small panels of indifferent stained glass, which cause this dismal darkness, and serve to mystify the weak-headed people for whom such work is sympathetically designed."

Architects "have been the bane of art for the last 300 years;" "the architectural gibberish of St. James's Club is cognate with similar discordant and incoherent utterances at Manchester and Balliol;" the new buildings at Kensington Museum are, "in fact, neither 'art' nor in any sense true handicraftsman's work, but mere machine and copy work; heartless, senseless, and absurd;" Blackfriars Bridge "is really a wonder of depravity"; the Midland Railway Terminus is "a monument of confectionery;" the London University buildings are pointed to as a work of "painful incapacity," and the Piccadilly side of Burlington House is signalised as "the most contemptible public building that the architectural profession has achieved." The denunciation is so general and so loud that it is likely to miss much of its intended effect.——"Notes on Continental Schools. By John F. Moss, Clerk to the Sheffield School Board. Grant & Co., Fleet-street." Having spent his vacation in visiting some of the schools of Holland and Germany, Mr. Moss wrote these intelligent notes, intending them exclusively for presentation to the chairman and members of his own Board, but they were thought deserving of publication. With regard to the size and general arrangement of the Dutch school buildings, some particulars will interest:—

"In the province of Utrecht the usual dimensions of school-rooms are fixed as follows:—Length, 16 mètres, or thereabouts; breadth, 8 mètres. (Mètre=39·3707 in.) Such a room is calculated to accommodate about 150 children. Wherever practicable a room this size is divided into two parts by glass doors, or some similar contrivance. In villages, however, this is often considered unadvisable, owing to the difficulty of employing more than one head teacher. As a rule the elementary schools of Holland are conducted in buildings of one story only. In some districts of the large towns it is not always convenient to follow out this rule; as, for instance, in Amsterdam there is a free school built in three stories, with three large rooms or departments, on a spare lot of ground near the 'School Zeemanshoop,' the economists in the council having decided that the ground in that part of the town was far too valuable to be lavishly used for one-storied buildings only. But this kind of arrangement is considered objectionable by the educational authorities, and decidedly to be avoided. In the large schools at Amsterdam which came under the writer's notice, however, the rooms were apparently larger than the size prescribed by the authorities in the province of Utrecht. At one there were stated to be upwards of 360 children congregated in one room without any division except in the ordinary arrangement of the classes. The number is sometimes much larger. . . . .

In the planning of Dutch public schools great care appears to be taken that there shall be a thoroughly abundant supply of light and air. In connexion with all the schools I visited there are gymnasiums, which are occasionally used for other purposes during working hours,—such as for singing lessons. But many schools are as yet incomplete in this respect, though the great desirableness of such a provision seems to be generally admitted. In other respects the arrangement of the buildings seemed very complete.

The desks are placed in groups along the whole length of the room. The teachers seem unanimous in their approval of the short length of desks, and they hold their system to have very marked advantages. As much space as possible is left between each class, and the teachers' desks are placed immediately in front, with black board and other apparatus close at hand. The head master's desk seems to be usually fixed on a small platform, so as to command a full view of the whole school. Each child knows his or her particular place in the school, assigned at the commencement of the quarter, half-year, or year, as the case may be, and the children retain their places until a change is authorised by the teacher."

Miscellanea.

Homes for the Working Classes.—At a meeting of the Board of Works, Colonel Hogg, M.P., in the chair, the Parliamentary committee reported on a letter from the Hampstead Vestry as to the desirability of the Board obtaining power to make provisions for house accommodation for the working classes, who will be dispossessed by the proposed improvements of the Board. It had been suggested that certain portions of the land to be taken by the Board should be set aside as building sites for the accommodation of the working classes. The architect had selected three sites to be so set aside, and the committee recommended that the solicitor be instructed to prepare a clause for insertion in the Improvement Bill of the Board, now before Parliament, to this effect. Mr. Dalton, in moving the adoption of the report, said that the works of the Board would turn 1,457 persons out of their homes, and the plots to be set aside would accommodate 3,452 persons. Mr. Richardson moved the postponement of the debate. The chairman said he had been in communication with the Home Office on the subject, and he had been much pressed by members of Parliament to come to a decision at once. The result of his communication with the Home Office was embodied in the report. Mr. Alderman Stone warmly supported the report, which, after some discussion, was adopted.

The Metropolitan Extension Railway.—Erection of Waiting-rooms on the Platforms.—In compliance with a memorial which has just been presented to them, the directors of the London, Chatham, and Dover Railway Company have decided to erect waiting-rooms upon the platforms of the several stations of the Metropolitan Extension line between Ludgate-hill and Victoria. At present the only waiting-rooms at most of the stations on this line are on the lower level adjoining the booking-offices, and passengers must either seek shelter there, and run a great risk of missing their trains, or constantly expose themselves to the inconvenience arising from rain and inclement weather.

The Northampton New Cattle Market.—The new cattle market, now being constructed on the Cow-meadow site, will not be ready for use probably till the end of the year, but progress is being made with it. Roughly speaking, the market occupies about the centre of the ground between the back of Bridge-street, and the railway-embankment. The principal entrance is from the newly-constructed road, which, commencing against A'Beckett House, runs parallel with the New-walk. It is 40 ft. in width, and the actual entrance consists of a double gateway, the two openings each being of 20 ft. The two gates are to be divided by a large pier, and on each side a lodge, the foundations of which are already laid, will be erected. The lodges will be small structures, will have sharp-pitched roofs, with round turret, their character being of a quaint Continental type. The entrance-road breaks into three branches. One of these continues straight down the centre of the market, whilst the other two branch off to the right and left at right angles along the top, with a width each of 25 ft. There is an octagonal space, in the centre of which a fountain, with drinking-troughs, &c., is to be erected. Besides this fountain there will be four drinking-troughs in the market, near to the main entrance. The works are being executed by Mr. R. Dunkley, of Blisworth, under the superintendence of the architect and surveyor, Mr. E. F. Law. The process of "filling in," so as to raise the level of the market, is now being rapidly proceeded with, and the brickwork is also in a forward state.

The Prizes of the Painters' Company.—The educational movement on the part of some of the London guilds is a good sign, and has not come too soon. The Painter Stainers' Company, as it was anciently called, was one of the first, in a comparatively small way, to offer medals and premiums for works connected with "the art and mystery of painting." The subject for which they offer rewards to decorators, artizans, apprentices, and others is described as "alto-relievo and decorative painting," and the prizes, three in number, are,—1st. The Company's silver medal and freedom of the Company; 2nd. The Company's silver medal; and 3rd. The Company's bronze medal. These rewards are open to any under the age of thirty years engaged in the trade, and residing within a radius of twelve miles from the Company's Hall. The specimens must be sent in between the 18th and 25th of May. It is to be hoped that some good work will be elicited. The Company do not ask for design (they would probably be disappointed in the result if they did), as the programme says the subjects may be copied either from an antique bust, cast of ornamental grouping, decorative moulding, or otherwise.

Worcester Cathedral Chimes.—The new peal of twelve bells in this cathedral has just been furnished with a set of chiming hammers, by which very simple contrivance the whole peal may be easily chimed for service by one person. This arrangement is the invention of the Rev. H. T. Ellacombe, rector of Clyst St. George, Devon, who first set them up at Bitton, Gloucestershire, in the year 1821, where they have been used ever since. They have this great advantage, that they are cheap in construction, and are not liable to get out of order; they are perfectly free from noise, are ever ready, and never in the way; neither do they at all interfere with the ringing of the bells, while the lines may be brought down to a manual in any part of a church. The work has been done by Mr. Thos. Hooper, of Woodbury, Devon, church-bell hanger, who has set them up in many other churches. The cost is but 1*l.* a bell, exclusive of travelling expenses.

South Kensington Museum.—Visitors during the week ending 20th of April, 1872:—On Monday, Tuesday, and Saturday, free, from 10 a.m. to 10 p.m.,—Museum, 15,753; Naval and other collections, 2,726. On Wednesday, Thursday, and Friday (admission 6d.), from 10 a.m. till 6 p.m.,—Museum, 2,936; Naval and other collections, 131. Total, 21,547. Average of corresponding week in former years, 13,280. Total from the opening of the Museum, 11,535,811.

New County Lunatic Asylum for Kent. The justices for Kent have approved of the purchase of 114 acres of land on Chartham Downs, at a cost of 5,586*l.*, being at the rate of 49*l.* per acre, upon which to erect a new asylum for lunatics.

Railway Conference on the Refreshment-room System.—A meeting of directors and managers of railway companies, at the Westminster Palace Hotel, has been conferring upon the present arrangements and management of refreshment-rooms at railway stations, especially in regard to the increasing facilities thereby afforded for the sale of intoxicating liquors, not only to the public, but to railway officials and servants, and upon measures to mitigate the evils arising from the present system. It was convened by the National Temperance League, who propose the prohibition of the sale of intoxicating liquors to railway servants whilst on duty; the provision of tea and coffee of good quality; and the free supply of filtered water. At the close of the discussion it was unanimously decided to suggest, amongst other proposals, to railway Boards throughout the kingdom: that intoxicating liquors should not be hawked on any station; that the rules against the railway servants on duty purchasing intoxicating liquors should be rigidly enforced; that the propriety of excluding the sale of spirits at refreshment-rooms (at any rate at many stations) should have the attention of the Boards; that in reletting the refreshment-rooms care should be taken by the Boards that simple refreshments, such as tea and coffee of good quality, should be sold at moderate prices; and that all the main stations on each line should, as far as possible, be supplied with good drinking water, in convenient places, free of charge.

Royal National Hospital for Consumption.—This institution is making good progress towards the completion of the design of its founder, Dr. Arthur Hill Hassall. The hospital is destined to find accommodation for upwards of 100 male and female patients in eight separate blocks of buildings on the cottage principle, erected at the Undercliff, Ventnor, Isle of Wight. Three blocks of buildings have been completed, and a fourth block is now commenced, Sir William Martins having undertaken to bear the entire cost of its erection. During the past year 53 men and 36 women in-patients have received the benefits of the hospital, besides 22 out-patients. The Chairman of the Biennial Festival, the Bishop of Winchester, stated that at present the hospital had only 500*l.* per annum of annual subscriptions, whilst it required at least three times as much. At this moment there were 50 applicants for admission who could not be admitted for want of room. The chapel fund was progressing; about 700*l.* had been subscribed for the purpose. A gentleman had undertaken to build one of the houses of the fifth block as soon as some equally benevolent friend came forward to erect the adjoining house. The secretary (Mr. Ernest Morgan) subsequently announced a list of subscriptions amounting to 2,000*l.* Dr. Hassall also announced that "An Anonymous Lady" had made a gift of 1,500*l.* towards the erection of the fifth block.

New Thoroughfare from Woodbridge-street to Clerkenwell-close.—The Clerkenwell Local Board are taking steps for the construction of a new thoroughfare from Woodbridge-street to Clerkenwell-close, passing the south boundary wall of the House of Detention. For the purposes of this improvement, the magistrates have offered to transfer gratuitously to the parish a strip of land outside the wall recently purchased by the county for the enlargement of the prison. The proposed new road will lead into St. James's-walk, and it is considered that it will be a great public improvement.

Lamps on the Thames Embankment.—At the meeting of the Metropolitan Board of Works last week, a letter from Mr. Parkes, contractor for the globe lamps on the Thames Embankment, was read, asking permission to supply the United States Treasury, by request, with a duplicate of the lamp and drawings of the standard. The Works Committee recommended that the request be granted, and that the United States Treasury be also permitted to have the use of the core-boxes, for the purpose of casting the standards at their own expense. On the motion of Mr. Runtz the recommendation was carried.

Bells and Gun Metal.—Much of the cannon taken by the Germans in the French war is to be turned into church bells. In this way not less than twenty parishes on the Rhine alone have been provided with bell-metal. The Cathedral of Cologne and that of Frankfort-on-the-Main have also received some.

Proposed New Town-hall, Northallerton. The directors of the Northallerton Market and Public Improvement Company have approved of the designs submitted by Messrs. Ross & Lamb, architects, Darlington, for the erection of a Town-hall, consisting of a covered Market-house and Assembly-room, in the centre of the town, and the old, unsightly shambles, which have disfigured the fine town-street for so many years, are being pulled down. The new town-hall will cover a space of 110 ft. by 35 ft., and will afford shelter and accommodation for country butchers, parties attending with butter, eggs, and farm produce. There will also be vaults and cellarage for depositing and packing the same, and every requisite convenience. The public room will be 72 ft. long by 32 ft. wide, with a handsome staircase, a raised platform, ladies' and gentlemen's retiring-rooms, cloak-rooms, &c. The contractors are Mr. Richd. Peacock, Northallerton, for excavation and brickwork; Mr. I. Hope, Darlington, plasterer; Mr. Thomas Thompson, Northallerton, joiner; Mr. J. Baines, Ripon, slater; Mr. George Layfield, Northallerton, plumber; Mr. W. T. Cooper, Northallerton, painter; Messrs. Hyerleid & Spence, Middlesbro', founders; and Mr. James Dodgson, Northallerton, stonemason.

Great Western Telegraph.—A company, to be called the Great Western Telegraph Company (Limited), has been incorporated, with a capital of 1,350,000*l.*, in 67,500 shares of 20*l.* each, to connect New York with England, and the West Indies directly both with New York and England. A comparatively short cable may also continue telegraphic communication to Brazil. The route will be from the Land's End to Bermuda, and, with one line, thence to New York, and another to St. Thomas's, in the West Indies. A contract for the making and laying of the cables for the price of 1,330,000*l.* has been made with Hooper's Telegraph Works (Limited), upon the basis of a specification for a similar cable recommended by Sir Samuel Canning, C.E., and Mr. Latimer Clark, C.E., last year, and recently revised by Sir William Thomson, F.R.S., and Mr. Fleming Jenkin, the company's engineers and electricians.

Worcester Model Dwellings Association. *An adjourned meeting of this association was held at the Guildhall on Thursday, April 18th,* Mr. John Parker presiding. Mr. Aldrich, hon. sec., stated that the committee had investigated the financial condition of the association, and found that there were liabilities, principally to tradesmen, amounting to 300*l.* Mr. Parker had offered to allow 100*l.* due to him to remain unpaid, and Mr. G. W. Hastings had undertaken to advance 100*l.* if an equal sum were provided by other members of the association. It was pointed out that either the liabilities must be met, or the property sold. A strong desire was expressed that the work of the association should be continued, and ultimately the gentlemen present agreed to advance the amount required to make the 300*l.*, with which all debts will now be paid.

The Universal Foul Air Purifier.—Under this title Mr. Lidstone has registered a compact little arrangement for holding charcoal to be affixed to the end of vent-pipes of drains carried to the tops of houses or other positions. He says,—

"For ventilating public sewers, vent-pipes can be carried into the interior of lamp-posts, and this purifying apparatus may be placed in the lower part of such lamp-post or receptacle, the pipe being carried from the top of the purifying apparatus to the top of the lamp-post."

The specimen sent to us is much too small to be of any use, but this defect is, of course, open to easy remedy.

International Exhibition.—In connexion with the western annex of the International Exhibition building, South Kensington, Mr. T. G. Messenger has erected for the Commissioners a Cotton House, or house for the growth and exhibition of the cotton plant. The framework is of iron, and the enclosing materials are slate-slabs and glass. The heating-apparatus evidently provides for a high temperature, and the arrangements for opening all the lights at once are simple and ingenious.

Discovery of Antiquities in Belgium.—Excavations for archæological purposes have been lately undertaken at Jupille, in an ancient place of sepulture in Belgium, and have resulted in the discovery of a considerable number of skeletons, one of which had on the neck a golden collar. A remarkably fine mosaic pavement has been discovered.

Restoration of the Spire of St. John's Church, Bury St. Edmunds.—A meeting of the parishioners of St. John's having been called for last Tuesday evening, to receive the report of Mr. J. D. Wyatt, of London, the inspector of churches for the Archdeaconry, on the condition of the spire, the report was read, and the Chairman observed that there could be no doubt from this report that they ought to repair the spire without loss of time, and the first thing would be to decide who should erect the necessary scaffolding. In the course of conversation the opinion was generally expressed, and confirmed by Messrs. Tooley & Robinson, that the scaffolding should be constructed by the builder who did the repairs, and whose men would work on it with more confidence if they raised it themselves as they went along. Mr. Tooley believed the work would not cost in all less than from 200*l.* to 250*l.* The Chairman remarked that it was important there should be no delay, so that they could get the lightning-conductor up before any thunderstorms came. He had no fear of being able to raise the money. The meeting appointed a committee to collect subscriptions—first in the parish and then out of the parish, and it was resolved that advertisements should be inserted in the local papers, calling attention to the report and soliciting subscriptions.

The Difficulty of Estimating Cost of Drainage. — As a proof of the difficulty of estimating drainage works, where water is present in the soil, we may mention that Mr. Aird, one of the leading contractors in the Metropolitan Main Drainage Works, made the following statement publicly at a meeting of the Institution of Civil Engineers in London:—"With respect to the cost of construction, he could state that, with few exceptions, they were executed within the contract price. One of these exceptions occurred in a portion of the work on the premises of the Deptford Gas Works, where it was intended to put up a gasholder. To facilitate this, the work of the sewer underneath, for a length of 130 ft., was commenced. Unfortunately, the contractors were not able to carry it out. His firm then undertook the work, and completed it. The estimated cost was about 2,000*l.*, whereas it actually cost upwards of 16,000*l.*"

Northern Architectural Association.—The fourteenth annual meeting of the members of this association was held on the 16th inst., at the Old Castle, Newcastle-on-Tyne, Mr. J. Hogg presiding. Mr. Thomas Oliver, the hon. secretary, read the annual report, which gave a *resumé* of the operations of the association during the past year, and also expressed congratulation on the number of members, which amounted to sixty-one, being an increase of one. The finances were also in a satisfactory condition, there being a balance of 19*l.* 7*s.* 9*d.* in the hands of the treasurer. The report was adopted. Mr. W. J. Shotten, of Sunderland, and Mr. Robert Lamb, of Darlington, were elected members. Mr. Oliver and Mr. Thompson were appointed delegates to the Architectural Alliance meeting, and to the annual Conference of Architects proposed to be held in May next.

Restoration of Exeter Cathedral.—A preliminary meeting, under the presidency of the Earl of Devon, and subsequently of Earl Fortescue, was held, on Tuesday last, at the residence of Mr. E. B. Stevens, A.R.A., 110, Buckingham Palace-road, for the purpose of forming a committee of Devonshire and Cornish men resident in London to promote a subscription in aid of the restoration of the cathedral of the diocese. The meeting was unanimously in favour of such a committee being formed, and we believe a list of members will shortly be published.

The Lister Statue.—At a meeting of the committee charged with the duty of arranging for the erection of a statue of Mr. S. C. Lister in a central part of Bradford, it was resolved to give a commission to Mr. M. Noble, of London, sculptor, to execute a colossal statue of Mr. Lister in Sicilian marble, at the price of 1,000*l.* The figure will be 10 ft. in height, and will be erected on a granite pedestal of 11 ft. or 12 ft. in height.

Metropolitan Water-Supply.—In reply to a question in the House of Commons, the President of the Board of Trade (Mr. Fortescue) said the Board had no power whatever to regulate the sources of the water-supply of the metropolis, except to prevent the water being taken from below Teddington Lock.

Archæological Discoveries at Uttoxeter. Mr. F. Redfern, of this town, has within the last nine months made a series of discoveries of interest, sites of Roman stations, from three of which he has Roman pottery. One station he points out as being on Uttoxeter High Wood. He has pottery from this station of which the north side remains perfect. He believes the premises of Dr. Taylor, situated in High-street, is the site of another, a small part of the terrace of which remains in the croft near the Hope and Anchor inn. He points out a third station at Stramshall, where he has made numerous excavations, and in all met with Roman potsherds, one piece of which is ornamented. The site of the fourth station he is enabled to identify is at Madeley Holme, in the Madeley field, where he has dug and met with ample evidence of the character of the place by the discovery of many fragments of late Roman pottery. He connects with the last a series of fine terraces at each side of the hill, remaining perfect on the west side, and constructed, he believes, most probably for defensive purposes rather than for cultivation. He also connects with these stations a meshwork of Romano-British maze.

New Well-Boring Engine.—A new boring apparatus has been made at the Eagle Foundry, Ipswich, for Meux & Co.'s London brewery. The leading feature is the employment of a large flat rope in lieu of iron rods, the advantage of rope over rods being that the former can be drawn from the bottom of the well to the top or lowered from top to bottom in three minutes, while the rods would take more than an hour. The jumping cylinder is so adjusted that the tool can give a very powerful blow and also one hardly sufficient to crack a nut. The double cylinder winding-engines in connexion with the boring-engine are capable of drawing out 10 tons at a time. The depth intended to be bored at Messrs. Meux & Co.'s brewery will exceed 1,100 ft. The well will be sunk under the direction of Mr. Allison, who claims patents on parts of the boring-machine.

Alvescott Parish Church.—During the restoration of this church the following remains were discovered, and have been preserved:—An altar slab, reredos, Easter sepulchre and aumbrey, double sanctus bell nitch, leper's window with two book ledges in thickness of the wall adjoining, two squints from north and south chantries, piscina, reliquary, and three consecration crosses. The old fifteenth-century panels in the south transept, alternate red and blue, with gilded stars and bosses, were too rotten, owing to past neglect, for present restoration; but the new roof of the transept has been so arranged that at any time the panels may be reproduced and set on the inner face, so as to restore the old appearance.

The Mazarin Bible.—An important discovery has recently been made by Mr. Richard Sims, of the British Museum, in the course of his researches in the Archbishop's library at Lambeth Palace. He found that a volume, described as a manuscript, was in reality a fine example of an early printed book, which further examination proved to be the second volume of the celebrated Mazarin Bible. The "Mazarin Bible" is the earliest printed edition of the Bible known. It is supposed to have been printed by Gutenburg and Fust, at Mentz, between the years 1450 and 1455, and it is probably the first book printed with movable metal types.

Slip of Wall.—An accident occurred last week at Pathhead, Fifeshire, whereby five men were killed, and four severely injured. The men were employed in building a retaining wall at a new floorcloth factory at present in course of erection by the Messrs. Nairn. The wall had reached a height of about 60 ft., when it gave way, burying the men in the ruins. It appears that the wall was about 4 ft. thick, and as it rose it was filled in behind with sand and earth from the bank which it was intended to keep up. The earth is supposed to have sunk, and by its pressure caused the wall to give way.

Houses unfit for Habitation.—The Holborn Board of Works, acting upon the recommendation of their surveyor and medical officer, have required the owner of three houses in Ormond-yard to demolish the premises, under the provisions of Mr. M'Cullagh Torrens's Artizans and Labourers' Dwellings Act. It was stated at the Board meeting that no structural alterations or improvements could possibly render the houses fit for human habitation.

Opening of the Free Museum, Nottingham.—The museum in Wheeler-gate, now the property of the town, has been formally opened by the mayor, in the presence of an influential company. The greater portion of the objects of interest which the museum now contains was the property of the Nottingham Naturalists' Society, and a considerable number of valuable objects were from time to time added, until the museum assumed the dimensions which it has had for the last few years. The place in which the exhibition was placed was for some period the old Mechanics' Hall, but previous to the fire by which that institution was destroyed, convenient rooms had been secured in Wheeler-gate. When the corporation resolved to adopt the Public Libraries Act, the society offered the museum, and a small but useful library, to the town, and the offer was accepted by the council. The re-arranged cases occupy two good-sized rooms, and objects of interest and value are to be found therein, illustrative of many very important departments of natural history.

The Crystal Palace Picture Gallery.—The annual exhibition of new pictures of the English, French, and Belgian schools opened on Saturday last. The private collection of Mr. James Virtue, containing eighty valuable pictures and water-colour drawings, are also being shown in a special side gallery. In one of the private galleries there is a collection of modern paintings lent to the company for exhibition by the proprietors of the *Art Journal*. Mr. S. C. Hall has lent for exhibition some water-colour copies of Frith, Creswick, Ansdell, Herbert, Maclise, Faed, Elmore, Leslie, J. H. Mann, Webster, Newton, and Bellows. At the south end of the gallery there are 131 copies of celebrated paintings by the old masters, culled from the principal picture-galleries in Europe. The copies have been made in water-colours by Mr. West, and being the property of the Crystal Palace Company, who value them as artistic studies, are not for sale.

Extension of a North London Railway Station.—The railway-station in Broad-street, jointly used by the North London and the London and North-Western companies, has for some time been undergoing a considerable enlargement by the erection of additional offices and buildings for the London and North-Western Company, built at the expense of that company. The additional buildings, which have just been completed, have extended the principal elevation of the station to almost double its former dimensions. The newly-erected portion of the structure is uniform in design with the rest of the building, but a special feature in the added part just finished is that the elevation is composed of an admixture of red, black, white, and yellow bricks.

The Reconstruction of Farringdon Market.—The Court of Common Council has had a strong party debate as to whether the decision of the Court that the Farringdon Market should be reconstructed, in order to provide room for the sale of vegetables and fruit, should be frustrated or not. Mr. Isaacs led an opposition which objected to the raising of 150,000*l.* necessary for the proposed work until the council could judge what modification might be made in the original plan. A long and noisy controversy ended in Mr. McGeorge carrying the adjournment of the debate, and giving notice to move the rescinding of the resolution.

The London Gas Companies.—An important conference has been held at the Vestry-hall of St. Martin's-in-the-Fields, to consider how the interests of gas consumers are affected by the Chartered Gas Company's Bill, in the Lords. The conference was unanimous in resolving to oppose the Bill, which has already been challenged as unfair to consumers by the Metropolitan Board. The Chartered Gas Company seek additional capital to the amount of 1,000,000*l.*, and power to pay upon this a dividend of 10 per cent. to the shareholders.

The City Surveyorship, Norwich.—The council have considered the appointment of a surveyor in the place of Mr. Benest, resigned. It was resolved that the matter be referred to the corporate officers' salaries committee to report to the council. It seemed to be the general feeling that there should be only one surveyor instead of two as heretofore.

Theatre Burnt.—The Theatre Royal, Melbourne, has been destroyed by fire.

The Royal Pier at Southampton.—The works connected with the extension now approach completion. The pontoon, having been repainted and fitted into its place, the iron bridge connecting it with the pier has been dropped upon the iron tanks provided for its reception. The lengthening of the pier provides deep water at all tides for the steamers of the Isle of Wight Company, and is an additional attraction to promenaders. The steam packets will also have advantages in embarking and disembarking their passengers and freight.

Reading Architectural and Archæological Society.—At a general meeting of this society, held on the 17th inst., at the Athenæum, an essay was read on the subject of "Bells," by Mr. A. E. L. Oswell, who, in the course of his paper, dealt exclusively with the general history of the bell, the origin of chime-ringing, the number of variations possible to be played on various peals, and the history of some remarkable specimens of bells. In the concluding part of his essay, he gave a description of the method of manufacture.

Figheldean Vicarage.—On the 6th instant the corner stone of a new vicarage was laid in this village by the Bishop of Salisbury. There was an appropriate service, conducted by the vicar, the Rev. H. C. de St. Croix, assisted by the village choir. Enough of the brickwork appeared to give the visitors some idea of the plan of the new building, which is to be externally faced with red bricks, relieved with bands of diaper brickwork, &c. The designs are by Mr. W. White, London; and the builder is Mr. T. Gregory, of Clapham Junction.

New Pottery Galleries.—Extensive galleries are nearly completed in Orchard-street, Portman-square, for Mr. John Mortlock. The new galleries are 120 ft. long by about 22 ft. in width. The main gallery is some 22 ft. high, with recessed and panelled ceiling, frieze, and dado. The works, which have been in hand about four months, are being carried out under the direction of Mr. Nash, architect, Royston, by Mr. J. Sutton, of Putney. The foreman of works is Mr. M. H. Judge.

TENDERS

For villa, at Teddington. Messrs. Thicke & Wilson, architects:—

Dove, Brothers	£1,825	0	0
Bishop	1,785	0	0
Sabey & Son	1,765	0	0
Williams & Son	1,742	0	0
Grover	1,685	0	0
Hurst	1,650	0	0
Macey	1,645	0	0

For new verandah round the present refreshment-room, Battersea Park, for Mr. Satti. Mr. A. J. Bolton, architect. Quantities supplied by Mr. Plimsaul:—

Mann	£590	0	0
Bowman	570	0	0
Williams & Son	555	0	0
Carter	547	0	0
Hill & Sons (accepted)	524	0	0

For new factory, in Hornsey-road, for Mr. W. Culmer Mr. John Viney, architect:—

Toop	£733	0	0
Heath	688	0	0
Dunford	650	0	0
Spurgeon	573	0	0
Hawkes (accepted)	510	0	0

For addition and general repairs to house, Lordship-terrace, Stoke Newington, for Mr. Bird. Mr. John Viney, architect:—

Madgin, Jun.	£515	0	0
Devereux	510	0	0
Garland	390	10	0
Hawkes	363	0	0
Heath (accepted)	353	0	0

For new residence, at Hornsey, for Mr. E. Smeeton. Mr. John Viney, architect:—

Hawkins & Ward	£549	12	6
Parsons	500	0	0
Heath	488	0	0
Hawkes (accepted)	465	0	0

For stables, loose-boxes, forges, and chimney-shaft in rear of the Oxford and Cambridge grounds, Chalk Farm-road, for Mr. Chas. Martin. Messrs. Tosh & Hayward, architects. Quantities supplied by Messrs. Plimsaul & Bolton:—

Hill & Son	£5,661	0	0
Kelley, Brothers	5,600	0	0
Mann	5,585	0	0
Manley & Rogers	5,462	0	0
Aitcheson & Walker	5,369	0	0
Robbins & Co.	5,275	0	0
Scrivener & White	5,267	0	0
Bowman	5,257	0	0
Williams & Son	5,177	0	0
Jay	5,134	6	9
Goodman	4,897	0	0

For school and residences, at Grays, Essex, for the School Board. Mr. T. R. Naples, architect. Quantities supplied:—

	Total.	Fittings included.
Gibbons	£3,440	£290
Taylor & Son	2,969	315
Thorn	2,797	238
Wallis	2,733	247
Blake	2,700	255
Cobham	2,677	268
Josolyne	2,533	270
Stephenson	2,503	278
Tyler	2,500	300
Niblett	2,449	320
Cattell	2,449	235
Dover, Wills, & Co.	2,317	239
Wright & Co.	2,275	239
Crook & Wall	2,135	230
Shipman	1,750	200

For Newdigate School:—

Lynn & Dudley	£1,550	0	0
Johnson	1,421	0	0
Hill & Sons	1,389	0	0
Shearburn	1,340	0	0
Hamplin, Brothers	1,252	0	0
Putney	1,223	15	0
Inkpen	1,150	0	0
Chart (accepted)	1,100	0	0

For free library and museum, at Blackburn, Lancashire. Messrs. Woodzell & Collcutt, architects. Quantities by Messrs. Taylor, Son, & Jackson:—

Stephenson	£8,060	0	0
Abbott	7,350	0	0
Ashworth & Broughton	6,997	11	0
Cotterall	6,980	0	0
Cooke & Green	6,945	0	0
Marshall & Dent (accepted)	6,929	0	0
Higham, Brothers	6,475	0	0

For a family residence, Brunswick-square, Brighton, and alterations to adjoining property, for Mr. John Preston. Mr. F. Warburton Stent, architect:—

Perry	£6,284	0	0
Gammon	6,246	0	0
Turner	6,128	0	0
Chappell	5,972	0	0
Colls	5,628	0	0

For a hop warehouse, in Bermondsey-street, for Messrs. Beeman & Hotchkin. Messrs. Wadmore & Baker, architects. Quantities supplied:—

Myers & Sons	£3,427	0	0
Downs	3,290	0	0
Dove, Brothers	3,185	0	0
Rider & Son	3,108	0	0
Jackson & Shaw	2,935	0	0
Gammon & Sons	2,894	0	0
Browne & Robinson	2,867	0	0
Scrivener & White	2,864	0	0
King & Son (accepted)	2,570	0	0

For new house, on Hampstead-heath. Mr. C. Eales, architect. Quantities supplied:—

Watson, Brothers	£1,975	0	0
Mann	1,945	0	0
Kelly	1,883	0	0
Scrivener & White	1,828	0	0
Clowser	1,792	0	0

For shops and offices, corner of the Poultry and Old Jewry, City. Mr. Herbert Ford, architect. Quantities supplied by Messrs. Karslake & Mortimer:—

Nightingale	£8,876	0	0
Higgs	8,628	0	0
Stimpson	8,176	0	0
Meyers & Son	8,155	0	0
Perry, Brothers	8,039	0	0
Brass	7,951	0	0
Kilby	7,782	0	0
Conder	7,701	0	0
Perry & Co.	7,676	0	0
Browne & Robinson	7,439	0	0
Scrivener & White	7,431	0	0
Turner & Sons	7,430	0	0
Henshaw & Co. (accepted)	7,095	0	0

For additions and alterations at "The Cedars," Old Charlton, for Mr. Sharpe. Mr. Geo. Elkington, architect:—

Fox	£3,060	0	0 !
Elliott	2,274	0	0
Cawdran & Corne	2,132	0	0
Wood	1,708	0	0
Cooke & Groome	1,423	0	0 !

For new manufacturing premises, at Chelsea, for Mr. F. Bell. Mr. Dovey, architect. Quantities supplied by Mr. Shrubsole:—

Perry & Co.	£1,875	0	0
Turrell	1,712	0	0
Sawyer	1,590	0	0
Pearce	1,450	0	0
Gough	1,449	0	0
Brown	1,415	0	0
Cooke & Groom	1,287	0	0
Packer	1,162	10	0

For house in Bloomham-road, Bedford, for Mr. James Corcoran. Mr. Horsford, architect. Quantities supplied:—

Moore	£1,585	0	0
Foster	1,528	0	0
Haynes	1,505	0	0
Freshwater	1,450	0	0
Litchfield	1,332	0	0
Spencer	1,203	0	0
Dover, Wills, & Co.	1,229	0	0

For farmhouse, Irnham, Corby, Lincolnshire. Mr. J. Lavender, architect:—

Story	£1,235	5	11
Patman & Co.	1,165	0	0
Kirk & Parry	1,130	0	0
Hubbard	1,095	0	0
Rudd & Son	975	0	0
Langmead & Way	945	0	0

For four shops, at Rotherhithe. Mr. George Stooke, architect:—

Daniels	£1,325	9	0
Machine	1,184	10	0
Stenteford (accepted)	1,107	0	0

For alterations to stables, Frognal-rise, for Mr. W. H. Wills. Mr. R. Walker, architect. Quantities by Mr. W. E. Stoner:—

Clowser (accepted)	£541	0	0

Athenæum, Camden-road.—Add to list given in our last Heath, 3,265*l.*

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We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests of course with the authors.

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III. TRADE WITH CHINA.
IV. MILTON.
V. MODERN SCEPTICISM—THE DUKE OF SOMERSET.
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The Builder.

VOL. XXX.—No. 1526.

Conference of American Architects.

ARCHITECTS in America are moving anxiously. We have just now received the printed report of the "Proceedings of the Fifth Annual Convention of the American Institute of Architects," held in Boston at the close of last year, and may usefully give some extracts and particulars. Mr. Richard Upjohn, the President of the American Institute of Architects, opened the meeting. In the course of his address, he said:—

"The increasing appreciation of the subject of architecture by the community at large, though gradual, affords cheering indications that our labours are beginning to impress and educate the minds of our people. In this connexion it may be well for us to consider with what aids and among what influences and associations we are working in our endeavours to perfect and embody our art. In the first place, as regards ourselves, we are differently situated from those of our profession who labour in countries abounding with ancient examples. Such witness of [illegible] power as it spread over the Ol[illegible] ours to enjoy. It is true, ma[illegible] d our experience of architect[illegible] aged and improved by a twelve mont[illegible] tour, more or less, through Europe and other countries. But, after all, this is a poor repast when compared with the continued feast of those who dwell among the works of past ages, and are awakened to note the wonderful creations surrounding them. The innumerable precedents which older examples present are invaluable to those who are anxious to learn. Then, again, the people of those countries, whose civilisation and culture so long ante-dates what is to be found amongst us, are more or less alive to the beauty of the works of their ancestors, and they are ready to accept the labours of those whose vocation it is to restore and recreate the works of old.

We have not these advantages, our situation is different; our country is in its youth, our fathers, for generations back, were not reared on the soil which the present generation call, by right of birth, their own. No great monuments of finished art and laborious devotion, such as grace the Old World, have been for ages impressing their lessons on the minds and hearts of the children of this new land of ours. We and our children have grown and matured without such influence and education. But it is our mission, as a profession, to worthily supply in this new field these educators, so that at least we be not less faithful to the men of the future than, in other lands, the men of the past have been to those of the present. We are engaged in this very work now, when we produce, with fitting accompaniments and originality, what has been taught us by those of old time. Following in the well-chosen steps of those who have preceded us asking for the old paths, yet ourselves leading in the direction of an intelligent and timely progress, we shall have followers who will appreciate our aims, and labour with and after us in establishing truthful works. And, indeed, we are not without encouragement from the great mass of intelligent people among whom we labour. The increased facilities of communication with Europe, which are yearly drawing great numbers of our people into contact with the very examples which we would wish them to study, have been the means of leading them to accept and appreciate the well-directed efforts of the profession. Men who have once seen and tasted of the beautiful, will not be long satisfied with what is inferior, especially if they have the means to provide for themselves what they have learned to admire and wish for. In the single instance of decoration, witness what an encouraging advance has been made during the past ten or twenty years. And generally it might be said that the revival of architecture, in all departments, which is to be found in France and England, is being felt to a large extent, as a salutary influence and impetus amongst us. The art of photography, which has reached so high a standard, has contributed much toward the spread of enlightened views and appreciation of architecture. Another encouraging feature of the times is to be noticed in the increased facilities of transportation, which have brought within the reach of almost every market the large varieties of stone and other building materials, in which our country so abounds. Owing to these facilities, we have been able to utilise, and that sometimes in combination, stones and marbles of various formations and colour; therein, certainly, the architect finds a wide and interesting field for the exercise of his best taste and skill."

Amongst the various reports brought up came one on Education. The committee said:—

"The problem of architectural education, then, as a practical problem, is simply this: How can a young man, in addition to the general culture to which he may aspire, attain such training in the elements of this professional knowledge as will entitle him to a cordial reception as a paid draughtsman in an architect's office?

The practical answer to these questions is twofold. There are two courses that a young man may pursue to this end. He may enter an office as a pupil, or he may enter a school of art or science as an architectural student. The office-training has the advantage in point of pertinence, it being an exact training for office-work; but it is almost necessarily deficient in breadth and system. A young man trained in this way is taught the use of his instruments, and soon acquires the handiness needful for the kind of work he is set to do; but he has no opportunity to learn to draw except with his T-square, and for the history and principles of his own art or of art in general, he must depend upon his own enterprise and such resources as he can, out of hours, command. An intelligent fellow may, in this way, learn a good deal, but it cannot be said that he is taught much. It has been proposed, and has of late been urged in England,—where the problem of professional education is receiving much attention—that the numerous educational appliances already existing, in the shape of isolated courses of history, construction, crayon drawing, water-colours, &c., should be made use of to supply the deficiency of training, and that if students and draughtsmen will not attend the evening courses, which it appears they do not, time should be allowed for the articled pupils, at least, to profit by these opportunities in the day-time. But it would seem hardly to require argument or the test of experiment to show that this demand is unreasonable, and impossible to be met. On whatever terms a pupil may be received in an office, he cannot, in the conduct of office work, be distinguished from the draughtsmen and assistants. The work given to him is as necessary to be done as that given to them, and he, no more than they, can be sent off in the middle of the day to improve his mind."

It was pointed out that courses of architectural instruction had been established in various educational Institutes. The report from Chicago showed that there are about sixty architects practising in that city with little or no uniformity as to general rules and regulations; further, that they greatly needed a library for general reference, all the private libraries with but one or two exceptions having been destroyed by the fire.

The report of the Secretary for Foreign Correspondence (Mr. H. A. Sims) showed that with a view to establish friendly relations with foreign art societies, he had been in correspondence with the Institute of Portuguese Architects; the Architectural Institute of Scotland; the Royal Institute of Architects of Ireland; the Architects' Union of Berlin; the Architectural Union of Hamburg; the Austrian Engineers' and Architects' Union of Vienna; the Imperial Academy of St. Petersburg; the Archæological Society of Athens, through Mr. Robert P. Keep, U.S. Consul; the Architects' and Engineers' Union of Hanover; the Architects' and Engineers' Union of Breslau; the Central Society of Architects of Paris; and the Society of Architects of the Department of the North, at Lille; an interesting list.

The Committee on Professional Practice, in their report, after commenting on the childish and barbarous spirit of professional rivalry, at once suicidal and fratricidal, that damages the profession, proceeded:—

"If it is true that it is rather through ignorance and want of thought than from any malicious purpose that the public deal so hardly with the profession, it is even more the case that it is thoughtlessness and ignorance of the real and permanent good in the profession itself rather than malice that has prevented, and still prevents, a hearty and even generous co-operation in the endeavour after a more wholesome professional life. It is owing to the absence of well-understood and intelligently accepted principles of conduct, and of clearly-defined maxims, that the false lights of momentary interest lead men astray. Now, in our own professional relations nothing is defined or clearly understood, and an intercourse with each other is too often that of well-meaning blunders, inflicting the greatest injuries and committing the most unpardonable breaches of manners and morals in utter innocence and ignorance. Hence jealousies, slights, heart-burnings, backbitings, and all manner of uncharitableness. It is just so in business: amateurs in stock-jobbing do things, in a conceit of shrewdness or smartness, and under a general notion that all is fair in war. They are the more to blame, for the difference between honest conduct and swindling. The rules of behaviour in these particulars, however ignorant of them we have grown up, were, in fact, settled long ago. But with us it is not so; the profession is, in a sense, a new one. Its relations are exceedingly complicated and difficult. The distinction between the proprieties and the improprieties is by no means an innate idea; and so it happens that, confident in our integrity, but quite ignorant of any general principles of conduct and of scruples, we do things for which the terms unprincipled and unscrupulous are a feeble characteristic. These things are not confined to the young or to the viciously-inclined. We all, trusting in the absence of any well-established principles of professional conduct, to the rectitude of our purposes, stumble blindly at times into regretted ways. It is by bringing light into such obscurity that professional associations like this find their best work. It is thus that in the medical and legal professions well-understood codes of behaviour have been established, that, like the code of manners which regulates the intercourse of daily life, lifts them out of the mere brute struggle for existence into life of intelligent and fraternal co-operation. We are still very much in the barbarous ages. But something may easily be done by a comparison of opinions upon some prominent points to settle the right rule of conduct. It is the uncertainty of the moral law that provokes these sharp criminations, and the very existence of such a code, even if it were difficult and uncertain in its applications, would at least tend to foster the spirit of scrupulousness, that sense of the difficulty of the situation and of the need of care and circumspection, which is the essence of practical morality, the chief safeguard of conduct."

The question whether an architect should give "supervision" or "superintendence" to his building, led to an interesting discussion. It was generally agreed that the architect should retain the chief control, but this, as it seems to us, was not the real point of the inquiry, which, in reality, opens a question that may be very usefully discussed further.

A paper on Terra Cotta was read by Mr. Sturgis; and Mr. Wight made a valuable statement as to the effects of the fire at Chicago. A

dinner closed the proceedings at the end of the second day, when several addresses were delivered of more than average interest. A few sentences from one of them must close our notice. "We know," said the President of Harvard College, "that beauty and enthusiasm for beauty are not dead but sleeping, and we live in the hope that if we succeed in holding fast our political and social freedom, fair fruits will yet grow from the rich soil of our material prosperity. Indeed, we see signs of this fairer growth. Our very institutions of finance, transportation, and trade, are becoming magnificent as they get substantial. The most elaborate rooms of Mediæval finish which I know in these parts are occupied by a bank in Court-street. Our railroad companies are beginning to realise that brick and wooden sheds do not offer all the accommodation which the public may profitably get. Our successful insurance companies are building palaces. These better buildings, though they are for business purposes, will bring us Americans one step nearer palaces for painting, sculpture, music, education, and religion; yes, and palaces, too, for that noble and refined family life which is the most characteristic product of Christian civilisation. Architects must watch with pleasurable anticipation the distinct strengthening in this country of the tendency to accumulate money in families. After all, there is no patronage for an artist like that of the single patron who has only himself to please, and is thoroughly master of his own resources. Hitherto our form of government and social mobility have not seemed favourable to the transmission of great properties from one generation to another; but we already see that education and culture have become hereditary, and soon wealth will be. The catalogues of Harvard, Yale, and the other older colleges, prove the transmission of culture. There are already families which have had four, five, and even six consecutive generations at Harvard College. New methods of securing property to descendants, particularly to women, are constantly invented, and some of these methods will succeed. Let us all look forward to that cheerful day when competitions and building committees shall be no more; when the individual owner, or representative of owners, shall engage the first leisure of his architect by a handsome preliminary fee, and pay his architect's bill for professional services when the work is finished, in the same spirit in which he pays the bill of his legal counsel, and when the architect's bill shall be based on the equitable value of services rendered, and shall be limited only by his desire to keep the business of actual clients and get that of other sensible persons."

The whole of the proceedings serve to show that the questions under discussion by our professional brethren on the other side of the Atlantic are very like those which occupy ourselves, and that the inquirers are characterised by high feeling and wide intelligence.

THE INTERNATIONAL EXHIBITION OF 1872.

The International Exhibition of 1872 may be said to have opened on the 27th ultimo; not with a flourish of trumpets, but with what was simply the largest, and in some respects the most brilliant, evening party of the season. The name of H.R.H. the Duke of Edinburgh, as *locum tenens* for his brother, the President, was on the invitation cards; and his Royal Highness, with his sister, the Princess Louise, if they cannot be said to have done, at all events received, the honours of the evening. On no previous occasion, in all probability, has the mere mass of visitors formed a spectacle so imposing in itself. Toilettes of all kinds, light, music, motion, and a crush, made up an evening that must rank as a success. Complaints have been made by some of our contemporaries of want of organisation,—that is to say, people were free to come and go, as at any private party, undirected by the police. It would be well for us to fall more readily into the self-organising habits of our continental neighbours, on occasions of this kind. We cannot sympathise with the demand for more of the "move on" style of arrangement. Only, as, unfortunately, all the visitors are not provided with carriages of their own, we must plead for more ship-shape cloak-room accommodation on other similar occasions for those who require it.

Of the Exhibition proper it is hardly fair to give details, in the present state of imperfect arrangement. A good deal, however, is already in place. The gallery which will probably be regarded by most visitors as the scene of the chief attraction,—that which contained the pottery last year,—is now in course of rapid adornment by cases of jewelry. Some of them contain objects of great beauty, value, and interest. British manufacture bears the palm, as far as we have at present seen. The costly *parures* of certain London jewellers are not more remarkable than are some of the specimens of the artificial jewelry of Birmingham. One case contained a number of shell *cameï*, which purported to be English, but which we should have thought to be Roman. Some of the peasant jewelry of Continental countries is also extremely interesting.

The lower gallery, on the west side of the gardens, is filled, as it was last year, with machinery, to be exhibited in motion. It seems to be in a much more forward state, and also, it struck us, more numerous in specimens, than in 1871. The upper gallery on the east is devoted to foreign pictures, and that on the west to British pictures. To the subject of these we shall, of course, return. The galleries are much less crowded with sculpture and other objects than last year. On the other hand, there is less to distract the attention from the pictures themselves. Above all things, it is to be remembered that these objects can here be *seen*. The walls are fairly covered in each gallery, and not overcrowded.

English sculpture is arranged in the semi-circular arcade on the ground floor, together with water-colour drawings, engravings, and photographs of all kinds. On the upper floor, cotton fabrics are arranged in frames and cases. Passing through the galleries to the south of the garden, we come to a room devoted to South Kensington terra-cotta. There is a division allotted to scientific instruments, a number of machines for printing and similar processes are in course of erection, and the Birmingham manufacturers present a shop of working jewellers, busily engaged in their craft. The galleries devoted to paper, *papeterie*, and all the wares of the stationer, are very elegantly filled, from the 2½-mile roll of paper manufactured for the *Times* newspaper down to the minute requirements of the desk. Connected with the paper department is a novel and very instructive collection. It purports to contain all the newspapers of the world, or at least so many as very fairly to represent that extraordinary kind of literature. Permanent photographic processes are at work near the door.

Last year we devoted a special article to the architectural contributions to the International Exhibition, regretting at the same time that there was not more of novelty among the designs, and that foreign architectural ability was so meagrely represented. This year there is not enough, either in quality or quantity, to warrant any such special mention, and we must be content to give a passing notice to the architectural work, along with other branches of design which are more or less represented in various parts of the buildings. Such architectural designs as there are to be seen are, at all events, more within public reach than last year, when they were elevated to the Albert Hall Gallery. The present position for architecture is on the ground-floor of the east quadrant. Here are hung about eighty drawings, a good many of which, however, represent buildings some time since completed, and some of which have passed the ordeal of so many Exhibitions that they may fairly be considered exempt from further criticism. Among those sufficiently new or original to invite special mention, one of the first we notice is a pen-etching of the new premises for Messrs. Sotheran, in Piccadilly, now erecting from the designs of Messrs. George & Vaughan; a building of which we may take an opportunity of saying something more in detail. The etching scarcely represents the effect of the design. Two or three designs for schools for various school boards, by Mr. Charles Henman (Alexander & Henman), are all more or less good, in a quiet, unpretending way, and very agreeably drawn and coloured; No. 3,672, for the Stockport School Board, is the best, and indicates some originality in grouping and (apparently) in planning; but the plan is not given. "Interior Decoration of a Ball-room" (3,613), by Mr. T. Cox, is satisfactory, as showing a harmonious arrangement of quiet colour, chiefly secondary and tertiary, with no great originality of detail. It is a relief to find a Renaissance colour-design without the odious pinks and yellows commonly supposed to be proper to the style by modern decorators. M. Schoy, of Brussels, deserves mention, as the one foreign contributor. He sends a finely-executed drawing of a very questionable design, entitled, "An Architectural Composition." Mr. Young's "Garden and Entrance Fronts of a Country House" (3,688) is very pretty, in half-timber construction, with, perhaps, just a little too much determination to be "picturesque." The same gentleman exhibits "designs and executed examples of modern domestic architecture," possessing the same kind of merit. We rather think this frame of drawings has been exhibited before. Mr. Edis's "New Houses in Queensborough-terrace, Bayswater" (3,632) show that the author is not wedded to one style; it is a very agreeable design for street architecture of an unpretentious description; and Mr. Sorby's "Pair of Villas at Peterborough," show both solid picturesque treatment and plenty of work for the money. Messrs. Perry & Hanson's "Altar to be erected in the Church of the Augustines, Bruges" (3,648), is a good Classic design of the kind, shown in a neatly-executed line drawing. Mr. Truefitt's "Additions to Aboyne Castle" (3,650), is an interesting specimen of architectural self-restraint in dealing with a severely plain building; the only architectural expression in the new portion resulting from a slight grouping of the windows, in massive and perfectly plain walls. The "Devonport Mission Chapel" of Mr. Glover (3,678), is a good specimen of picturesque treatment of a single apartment under one roof. Other exhibitors are Messrs. Teulon, Waterhouse, Seddon, T. R. Smith, and others, whose names are more or less known; but with the exception of those already mentioned, the drawings are mostly either what are well known, or do not contain sufficient novelty of treatment to call for remark here.

From modern architectural design to reproductions of ancient ones, [illegible] easy transition, and the Room XVII. ([illegible] gallery), mainly occupied by this [illegible] contains specimens of cons[illegible], including casts or copies of a good [illegible] Indian work; chiefly from remains at Futtip[illegible] Sikri, near Agra, moulded last year by Corporal Jackson and native moulders, under the direction of Lieut. Cole, R.E. The largest and most interesting of these is the "Porch of Sheik Salem Chisti's Tomb" (3,901), a specimen of Mogul architecture of the latter half of the sixteenth century. The treatment of the large brackets supporting the canopy, in serpentine curves, with the bends filled with pierced tracery, is most remarkable, and certainly picturesque, though far more wooden than marble in character; and the gentlemen of the Kensington Science and Art Department, who exhibit and notify this as a "pure specimen of architectural truthfulness," have possibly something to learn on that head yet. The four pillars (3,903) are characteristic specimens of the same school; these are, of course, covered with surface carving, in one case the diaper on the column being formed by a collocation of bud-like knobs (something like the "Early English" ballflower) entirely covering the surface. More interesting, and beautiful in their way, are the pillars and other details from the Sultana's apartments (same school and date), said to have been carried out by Akbar for one of his wives who was of Turkish extraction, and whom he wished to please with something in the style she was accustomed to see. The delicacy and variety of surface diaper on this work is most remarkable. A "Portion of Carved Band of the Kubt; Pathan Art, probably end of twelfth century" (3,912), is a very fine specimen of free scroll-work and leafage design in stone; the surface nearly flat, and the interspaces between the ornament sunk about an inch or more, very much after the manner of decoration which an English architect (Mr. Colling) has largely affected. There is nothing new under the sun; but this peculiar bold treatment is what one would expect to find under a northern rather than a southern sun. Adam Kraft's bas-relief of "Christ bearing the Cross," from the church of

St. Sebaldus at Nuremberg, is shown in a cast (3,950) from the original; a design full of intense expression, and noteworthy for the effective yet not over-elaborate treatment of the drapery. In this room are sundry electrotype imitations of English goldsmiths' ornamental work of the seventeenth century,—not remarkable, certainly, for purity of style or effective treatment. Somehow gold seems to betray its votaries, in art as well as other things, into a taste for the showy and meretricious. A Russian gold goblet (seventeenth century) in one of the cases shows far more artistic and refined treatment, the ornament, partly figures, being a low and delicate *repoussé* much more fitting to the material than the lumpy scrolls of the English work, which seems chiefly adapted to impress one with an idea of its market value as bullion. A fac-simile of a very little bit of Irish illuminated border in this room (3,967), dated to the sixth century, is worth a note for its peculiarity and alleged antiquity; the ornament being formed by three sets of narrow bands of deep orange, light orange, and green, respectively, very cunningly intertwined. This room contains sundry other reproductions of Indian details, copies of ancient European work of different kinds, &c., a cast of the Roslyn "'Prentice's Column" among others. Fac-similes are shown, by Messrs. Salviati, of the S. Vitale mosaics from Ravenna,—very quiet, and almost grey in prevailing colour of drapery, against a gold ground, and with that pronounced and formal stiffness of style and attitude which some of our friends wish to see adopted as the model for whatever further mosaics may be introduced into St. Paul's Cathedral. Copies of the Fairford windows appear; but these have been well seen before.

In the North-east Staircase (according to our recollection, though it is printed North-west in the Catalogue) we may notice, in passing, the only bit of stained glass design to be seen (up to date of writing these remarks) showing anything of originality or specialty of treatment calling for remark. This is a small "domestic" window, by Messrs. Gibbs & Moore (1,036), consisting of a centre circle, with a small heraldic design, the rest made up of small panels, with flowers and a little conventional leafage in the upper and lower portions. The treatment is emphatically that proper to stained glass, and the colouring rich and harmonious. A small Renaissance window, of the same size, and by the same artists, has a very nicely conceived centre figure; the rest is a somewhat commonplace pattern of scrolls and shells, the colouring of which leads us again to ask why the word "Renaissance" should be of itself enough to frighten away all pure colour from a window, and reduce it to dirty drabs and browns; and why pure colour cannot be applied to a design "Classic" in its general outlines, as well as to anything else? Will no artist in stained glass make the experiment? The rest of the stained windows have mostly nothing to distinguish them from a hundred others of the ordinary type; unless we except one on the North-west Staircase, part of a window for St. Paul's, Dock-street, in which there is some novelty in the lines of the design in the upper and lower portion, and novelty certainly in the centre design (Christ rebuking the storm), where there is stained glass water undulating in conventional waves, and curling in conventional spray round the rudder. It is high time a prize were offered for the best treatise on the "True Limits and Capabilities of Stained Glass Design," and the result circulated among the "artists."* We shall find somewhat more satisfaction in looking at the specimens of furniture design, which are not so numerous, nor on the whole so interesting, as last year's, but exhibit a good average of merit in design, and much beautiful workmanship. This is mostly in Rooms VII. and IX., in the west galleries. In a general way, we are glad to see less of that ostentation of simplicity, shown in excessive squareness and plainness of form and outline, which we protested against in reviewing the last collection, and which is just as much an affectation, in its way, as the weak, sprawling curves of the French "fashionable boudoir" style; of which, also, there is less, indeed very little, to be seen this year. Ebony and inlay predominate considerably. Among the best of the ebony cabinets is one designed by Mr. Talbert (2,770) in a *quasi*-Renaissance manner, with very little that can be called carving, the ornament being mostly very flat or incised; the back to the cupboards is formed by a naturalistic diaper of dark green leaves on a gold ground; the whole effect is very artistic. No. 2,767, exhibited by Doulton & Co., shows a new suggestion in cabinet ornament, the panels being filled with bas-reliefs in pottery (figure subjects), but the result is hardly satisfactory, the material being too incapable of sharp finish to be used successfully on such a small scale. A glazed terra-cotta mantelpiece (2,785), designed by Mr. Gamble for the South Kensington Museum, forms another of sundry indications either that this material cannot be a medium for high-class decoration, or at all events that the right treatment of it has not been hit upon: the smooth, washed-out look of the glazed foliage decoration (of a very commonplace character) is anything but pleasant to look upon. A "stained and painted ash cabinet," by R. Chapman (2,780) is a suggestion for specialty of treatment which might be very successfully applied where economy is an object; the ornaments (including small figure subjects) are drawn in dark line upon the slightly-stained surface of the wood, the grain showing through the whole; the misfortune in this instance is that the ornament is poor in character and the figures very bad: the general shape and make of the article is solid-looking and purpose-like. A "Mediæval" sideboard, designed by Mr. Tarver (2,764), shows the good effect of gilding upon plain oak, the ornaments being mostly incised and gilt, a very pleasing and simple method of decoration. No. 2,761 is another individuality in cabinet-work, a carved piano, by Luis Cavage (Spain). The wood is left untouched by varnish or any other compound, and every portion of the surface carved in elaborate flat enrichment of a semi-Moorish character, with great variety of detail; there is not the slightest attempt at colour decoration. The general effect is very pleasing, and in very good taste, but it wants just a little more decided *motif;* a little plain surface, or a few inlaid darker bands, would have given a little point to the design; it is interesting, however, to come across a mode of treatment so entirely different from what we are mostly used to in modern work. No. 2,760 is a cabinet, with panels formed of what are called in the catalogue "stoneware bas-reliefs," but which are not bas-reliefs at all, but more incised designs on the stoneware surface, the lines filled in black. The effect is good, and may be taken as a suggestion worth notice. An "ebonised" cabinet, with painted panels (2,781), is fathered by the "Decorative Art Society," *en masse*, as it would appear from the catalogue,—the panels painted with figures, on a gold ground, of a hawker and a lady feeding a swan. The figures are up to the average of this sort of work in merit. An inlaid table (2,783), by E. Prignot, is one of the very best things of the kind that we have seen. The design is Renaissance in character, but treated with conventionalised ornamental details of considerable novelty, as well as elegance, and with a very happy and effective combination of tints in the various woods employed. The designer has contrived also to render the supports of the table elegant and pleasing in form, without looking weak or flimsy, a point in which few furniture artists seem to succeed. An inlaid cabinet (2,786), in rosewood and lighter woods, near this, is also worth attention as a good piece of work of the kind. No. 2,777 is a good specimen of modern Gothic oak furniture, by J. Pencknett. It is a little too architectural in form and detail, but a very good, solid piece of work, the ornament chiefly formed by black inlay and panels of rich brown tint. There is more refinement in the details than we sometimes see in modern work of this school. No. 2,772 is a better thing of the same class, by S. J. Nicholls: a very good and refined piece of work, indeed, especially in the clever way in which the ends are treated; the design of the upper portion here is particularly elegant, more noticeable as this is just the portion which it is generally most difficult to treat satisfactorily in this kind of work. A "fire-place, with painted tiles, oak cornice and framing" (2,771), is the largest and most important piece of work of this kind in the room; the base of the composition is formed by marble and tiles; over this an oak carved Gothic framework and a large painted cove cornice, crowned with a heavy oak moulding which works in to the framework of the ceiling, the joists of which are shown. The tiles are too heterogeneous, being painted with all kinds of small subjects in that disconnected haphazard way which some of our modern designers are too fond of, and which indeed is, in fact, an avoidance of "design;" the carving above is exceedingly good. The cove is painted with a green diaper, and three figure-subjects, indicative generally of domestic felicity, introduced in medallions on gold ground: there are on the framework below also two very elegant figures, similarly treated, apparently representing "work" and "play." The combination of the tiles and oakwork is pleasant in effect, and though we think much more might have been made of the tiles by a different method of treatment, there is no doubt that on the whole this is a fine piece of work, generally creditable to the two gentlemen whose names are appended to it, S. J. Nicholls and C. Rossiter. The figures, which are of a much higher class than we ordinarily find in furniture work, are, we presume, Mr. Rossiter's contribution to the design.

We may have more to say next week as to some of the other specimens of ornamental design of different kinds, which are scattered in the usual indiscriminate style up and down the building.

* One or two windows there are still to be filled, apparently, "for better or for worse;" we sadly fear the latter.

THE ART UNION.

THE annual meeting of the Art Union was held on Tuesday last in the Adelphi Theatre, Lord Houghton in the chair. Among those present were Sir Walter Stirling, bart, Sir W. Bodkin, Mr. E. Ambrobus, Mr. J. Martin, Mr. J. B. Butterworth, Mr. Z. Troughton, Mr. W. Smith, Mr. R. Wilde, Mr. Francis Bennoch, Mr. Lumb Stocks, R.A., and Mr. W. E. Frost, R.A.

Mr. L. Pocock, hon. sec., read the report, of which we print the pith:—

The Council have the gratification of announcing that the sum subscribed for the year now ended amounts to 11,930*l.* 12*s.* 6*d.*

The eight plates of coast scenes engraved from the works of English artists in water-colour have proved exceedingly popular. A large proportion of the impressions are already in the hands of the members, and the remainder will be delivered as soon as possible. The success which has attended this issue may induce the Council to consider the expediency of making a somewhat similar experiment on a future occasion.

Since the last meeting the Council have been deprived by death of two valuable members, Dr. Mortimer, formerly head-master of the City of London school, and Professor Westmacott, R.A. The latter, especially, has been a frequent attendant at the meetings, and constantly rendered valuable assistance by his professional knowledge and experience. To fill up one of the vacancies thus caused, Mr. W. E. Gumbleton has been elected.

The Council continue to receive very efficient aid from the local secretaries and agents in all parts of the world, and on this occasion they would refer more particularly to the services of Mr. Whitcombe, Cheltenham; Mr. Baily, Birmingham; Mr. Furst, of Christiania; Messrs. Pepys, Von Beckerath, and Drory, in Prussia; Mr. Walch, in Hobart Town; Messrs. Hutton, Tonkin, and Watts, at the Cape; Mr. Glazier, of Hartford, and Mr. Ranlett, at San Francisco, in the United States.

The accounts have been audited by three members of the finance committee, and by Mr. Atkinson, of the Bank of England, and Mr. W. Wright, to whom thanks are due.

The following is a brief summary of the receipts and expenditure; a detailed account will, as usual, be printed in the report.

Amount of subscriptions				£11,930	12	6
Allotted for prizes	£6,410	0	0			
For print of the year, almanack, report, &c., and reserve	3,051	0	0			
				9,461	0	10
Agents' commission and charges, advertisements, postage, &c.				2,469	11	8
				£11,930	12	6

The amount to be expended on prizes will be thus allotted:—

22 works at	£10	each.
20 "	15	"
13 "	20	"
12 "	25	"
10 "	30	"
10 "	35	"
8 "	40	"
6 "	45	"
4 "	50	"
4 "	60	"
2 "	75	"
3 "	100	"
2 "	150	"
1 work at	200	

To these will be added:—

1 Marble "Wood-nymph."
8 Nelson Columns.
2 Cameos.
30 Townley Vases.
2 Bronze Medallion Inkstands.
40 Wood-nymph Statuettes.
20 Small Tazzas.
300 Chromos of "Bellagio."
60 Chromos of "Kite Flying."
80 Busts of Princess Louise.
30 "Etty" Silver Medals.

These, with the prizes given to unsuccessful members of ten years' standing, will raise the total number of prizes to 940.

For the coming year the Council have prepared a plate, admirably engraved by the late Wm. Holl, from the

picture, "Rebekah at the Well," by F. Goodall, R.A. The picture sets forth the scene at the moment when Abraham's servant, having accosted the damsel, and asked for a little water out of her pitcher, she gave him to drink, and drew water for his camels also; and as the camels had done drinking, the man took a golden earring and two bracelets, and put them on her ear and her wrists, and "wondering at her, held his peace, to wit whether the Lord had made his journey prosperous or not."

The artist has with consummate skill rendered in the face of Rebekah an expression combined of the *wonder* she feels at the unexpected address of the servant,—*joy* at the prospect of a wedded life, which, by the women of Judea especially, was considered as necessary to escape contempt, — and a kind of *inspired awe* at being chosen as the one who was destined to be the mother of "thousands of millions," and in whose seed should "all the nations of the earth be blessed." The anxious look of the servant, also, waiting to see if his suit should prosper, is admirably given. The Council have every reason to believe that this plate will be a great success.

During the twelve months which have elapsed since the last annual meeting, there has not occurred, in connexion with matters of art, any event which appears to call for particular notice in this Report, and it has been thought, seeing that a new generation has grown up since this association first saw the light, thirty-six years ago, that a slight sketch of the origin, progress, and present position and prospects of the Society might be acceptable. To give a full and exhaustive account of the transactions would require much more time than can on such an occasion be devoted to it.

In the year 1837 the Kunst-Vereine of Germany had been for some years in operation, and there was an association of a somewhat similar kind in Scotland, and it occurred to a few lovers of art that it would be a public benefit to establish an institution of the same kind in London. A committee of seventeen was formed, of whom four are still members of your Council, and they published their first programme in February of the above year. In one most important particular, however, their plan differed from those which then prevailed, inasmuch as while in all existing art-unions the selection of works to be given as prizes was made by the governing body, it was determined in this case to confide the selection of their prizes to the prizeholders themselves. Nor have the managers of this Society ever seen any reason to repent of this arrangement.

The amount of subscription in the first year of the Society only reached the sum of 489*l.* 6s., with which the prizeholders were able to purchase thirteen works, varying from 10*l.* to 100*l.*

In the second year of its existence, the Society adopted the principle of setting apart a certain sum for the purpose of engraving a picture, that each member might have an impression of the plate,—feeling that, by combination, a work could be produced, and placed in the hands of every member, of the market value, at least, of his subscription, without unduly trenching on the fund for the purchase of prizes, and that every subscriber would have a direct and certain return for his outlay.

By the third year the amount of subscriptions reached 1,295*l.* 14s., and relations had been established with thirty-seven gentlemen in the provinces, who gave valuable assistance, in making known the objects and advantages of the Association. This is a point to which much attention has always been paid, and the result is, that there is scarcely any part of the world to which the publications of the Art-Union have not penetrated, through the instrumentality of gentlemen who devote a large amount of time and trouble to the promotion of the cause of art.

In 1841, his Royal Highness the late Duke of Cambridge became President of the Society. His Royal Highness always took great interest in its proceedings, and generally presided at the annual meeting.

In 1841 a sub-committee was appointed to consider the future prospects, and the most efficient mode of working the enlarged means of the Association.

Three proposals in particular emanated from the deliberations of this Committee, which have since held prominent places in the Society's programme.

It was determined to endeavour to establish the production in England of artistic statuettes in bronze.

It was proposed to commence a medallic series of the history of British art—to produce dies for one medal each year; having on the obverse the head of some distinguished painter, sculptor, or architect, and on the reverse, a subject from one of his works.

The *third* result of the sub-committee's recommendations was the offer of a premium of 60*l.* for a series of designs in outline, illustrative of some epoch in British history, or of the work of some English author, and a further remuneration for the artist's superintendence, if it should be deemed expedient, to engrave the composition selected. The object of the committee was to call the attention of our artists generally to that purity and correctness of drawing, and severe beauty of form, which, apart from colour, and all the effects of light and shade, exist in the compositions of the fictile vases of the ancients, in the outlines of our own Flaxman, and in the compositions of Kiepenhausen, and some later Germans.

All the preparations for holding the annual meeting in 1844 were made, the date being fixed, as usual, for the last Tuesday in April, when the Committee were startled by the receipt of a letter from the Treasury to the effect that the proceedings of the Art-Union were illegal, and that the continuance of the same would render all parties concerned liable to prosecution. The Committee thereon immediately suspended all proceedings. A memorial was addressed to Sir Robert Peel, setting forth the amount of benefit already conferred on the artists of the country by the Art-Union, and the great loss and disappointment which would arise from stopping the distribution of the large amount of money then actually in hand. The Committee had an interview with the Minister's Secretary, but were unable to obtain any guarantee to allow them to proceed with the drawing.

A meeting of artists was held, numerous petitions were presented, and, on the motion of Mr. Wyse, a Committee of the House of Commons was appointed "to consider the whole question of art-unions, and what are the most expedient and practicable means to place them on a safe and permanent basis, and to render them most subservient to the improvement and diffusion of art through the different classes of the community."

In the meantime a temporary Bill was prepared by Lord Monteagle, and carried through Parliament, to enable the distribution of prizes to take place; and the meeting was held on the 13th of August.

The Report of the Select Committee of the House of Commons was a complete investigation of all the points which could be urged for and against art-unions, and the conclusions in their favour were thorough and unanswerable. Nevertheless, there was some difficulty in getting the Government of the day to use their influence in passing the Bill, founded on the Report of the Committee; but finally every obstacle was removed, and the Bill, legalising art-unions, under certain conditions, received the Royal assent on the 13th of August, 1846, and on the 1st of December of the same year the Association was incorporated by Royal charter.

In the year 1845 the Committee offered a premium of 500*l.* for an original picture, illustrative of British history. Twenty-eight cartoons were sent in on the 1st of January, 1846, and the premium was awarded to one, of "Queen Philippa interceding for the lives of the Burgesses of Calais," afterwards found to be by Mr. H. C. Selous, who had, on a former occasion, received the premium for his illustrations of the "Pilgrim's Progress." A premium of 500*l.* was at the same time offered for a group or single figure in marble, to be competed for by models in plaster, the size of the intended work. In reply to this proposal twenty models were sent in, and exhibited in the concert-room of the Princess's Theatre. The premium was awarded to "The Dancing Girl Reposing," found to be by Mr. Calder Marshall, now R.A. The figure was most successfully executed in marble, and in the year 1863 it was the chief prize in the distribution, and fell to Mr. Kenning, of Brington, Northampton.

In 1845, almost the first experiment in producing statuettes in porcelain was made. A reduction of Mr. Gibson's beautiful figure of "Narcissus" was placed by your committee in the hands of Messrs. Copeland and Garrett, and a very satisfactory result was obtained. This was the beginning of that series of twelve statuettes and busts which are amongst the most popular of the Society's productions. It may be mentioned incidentally that of the Clytie bust alone more than 2,400 copies have been distributed.

In 1845, with a view to affording encouragement to the art of gem-engraving, but little practised in this country, the Committee offered premiums of 60*l.*, 30*l.*, and 15*l.*, for the best cameos in profile, by British-born artists, of a head of Minerva, in the collection of bronzes in the British Museum.

The first and second premiums were awarded respectively to Miss Elena Pistrucci and Mr. Henry Weigall.

A very important feature in the Society's programme is the *Reserved Fund*,—a fund formed from the reservation of 2½ per cent. of the amount subscribed each year, as required by the charter of incorporation,—from the portion of the amount set apart for prizes, not expended by the prize-holders,—from the profit on the sale of catalogues of the exhibition of prizes,—and from the interest of the fund itself. The object of this fund is to obtain a gallery, and otherwise assist in promoting the objects of the association.

The Council have at different times had before them proposals in reference to the erection of a gallery and offices, but have not as yet been able to find a site combining the qualifications which appear to them essential for such a purpose. They are still anxiously endeavouring to effect the object in view, and, in the mean time, the fund is employed in the production of works for distribution in future years. The interest of the money thus borrowed is repaid to the fund from the subscriptions of the year in which the work so produced is made use of. This fund now amounts to 16,114*l.*

In the year 1848, the Council were much surprised at receiving, from the Lords of the Committee of the Privy Council for Trade, an intimation of their intention to interfere with the constitution of the Society in three several particulars, viz., that the works of art to be given as prizes should be selected by a committee instead of the prize-holders themselves—that the annual issue of a print from some picture by an English artist should be discontinued—and that 10 per cent. should be reserved out of the subscriptions for the purchase of works, not for distribution, but for public exhibition. The Council energetically opposed these alterations; and, after much correspondence and many interviews, the Board of Trade forbore to urge their views "against the strongly expressed sentiments of the Council."

In 1849 the Council offered a premium of 100*l.* for a bas-relief for the purpose of engraving. Twenty-five designs were sent in, and the premium was awarded to Mr. Hancock for a design of "Christ Entering Jerusalem." This, with a companion, "Christ led to Crucifixion," by the same artist, was engraved, and both prints have been, and continue to be, in great demand.

In preparing the annual work for presentation to the members, it has always been the wish of the Council to treat *directly* with the engraver. Only those, however, with whom the duty rests can tell how difficult it is to have ready, year after year, a work which shall combine the necessary qualifications of artistic excellence and interest for the public at large; being dependent besides on the health and strength of the individual engraver.

A difficulty arose in this direction in the year 1850, when it was found that the work intended for distribution could not possibly be completed in time, and the Council were fortunate in being able to secure a pair of steel-plate line-engravings from Mr. Webster's pictures of "The Smile" and "The Frown," which proved exceedingly popular, and in addition to which was given a series of etchings illustrating Shakspeare's "Seven Ages," by Daniel Maclise, R.A.

In 1850 the Council offered premiums of 100*l.* and 50*l.* for the first and second-best model in plaster of a single figure to be produced in bronze. Forty statuettes were submitted, and of these twenty-four were selected, and formed a very interesting feature in the first Great Exhibition of 1851. The first premium was allotted to "Satan dismayed," found to be by Mr. Armistead; and the second to "Solitude," by Mr. J. Lawlor. The first has been reproduced in bronze, and the second in parian.

In 1851 the Council had to lament the loss by death of the president, H.R.H. the Duke of Cambridge, who ever strove with kind readiness to advance the interests of the Society. The Council were glad to have an opportunity of showing their appreciation of the services rendered by Lord Monteagle, at a time of much difficulty and danger, in 1844, by electing his lordship to the vacant office.

In the year 1855 was instituted the custom of presenting to members having paid ten consecutive subscriptions without gaining any prize, a *consolation* prize, in the shape of one of the parian busts or other works, and this arrrangement has been found to give the greatest satisfaction, and has had the effect of retaining many members who might have seceded, on account of their want of success in the annual distributions.

In 1860, a premium of 100 guineas was offered for a series of designs, in outline, illustrative of Tennyson's "Idylls of the King," and in reply to the invitation forty-three sets of drawings were sent in. The premium was awarded to a series found to be by Mr. Priolo. They were engraved, and formed part of the annual presentation to the subscribers of a subsequent year.

In 1862, the Council commissioned Mr. John Leighton to design a large tazza, to be produced in ceramic ware, as a memorial of the Prince Consort, anxious to contribute, in however small a degree, to the preservation of the memory of one to whom this country is in so many ways—especially in the way of encouragement of arts—so deeply indebted. Her Majesty was graciously pleased to accept one of these tazzas, and desired to have three of the same prepared for her, for presentation to special persons.

At the International Exhibition of 1862 the bronze and parian works of the Society, arranged on a raised stand, formed one of the most attractive of the "trophies" placed along the central nave of the building.

In 1863, a premium of 600*l.* was offered by the Council for a life-sized figure or group in marble, to be competed for by finished models in plaster. In reply, fifteen models were sent in, and, by permission of the Committee of the Privy Council for Art, were exhibited in the South Kensington Museum. The premium was awarded to a group, "The Wood-Nymph," found to be by Mr. C. B. Birch. It was successfully reproduced in marble by the sculptor, and will be the first prize in this day's distribution.

In 1862, the Council received an invitation to send representatives to the Artistic Congress at Antwerp, and two of their members attended in that capacity. The fêtes and meetings occupied nearly a week, and 700 artists from Germany, France, England, and elsewhere, received princely hospitality during the whole time, and the whole population participated in offering homage to the arts, and in effectually carrying out the promise of the motto, everywhere displayed, of "Welcome to Rubens' land."

In 1865, arrangements were made with Mr. Stocks for engraving Mr. Maclise's noble wall-painting in the Palace of Westminster, of "The Meeting of Wellington and Blucher after the Battle of Waterloo." This is one of the most important engravings ever undertaken. The picture contains upwards of eighty heads, besides horses, guns, and other warlike implements, and an infinity of detail. After more than five years of incessant labour, Mr. Stocks has completed his task, and produced a most satisfactory plate, and the impressions will be the presentation work of a future year.

By the lamented death of Mr. Maclise—with whom the Council had many transactions, and as many opportunities of estimating his value, not only as an artist, but as a man of the most honourable and large-hearted nature—they lost the advantage of his superintending care in bringing these works to completion. They feel, however, that the result will be, in all respects, most satisfactory.

In 1866, the Council had to deplore the loss of their president, Lord Monteagle, whose genial and efficient assistance at the annual meetings they had continued opportunities of acknowledging. The office was offered to, and accepted by, the Right Hon. Lord Houghton, long a member of the Board, who has since generally presided, and frequently aided with his advice and experience at the meetings.

In the year 1866, Art-Unions became again the subject for Parliamentary inquiry.

It was felt by many persons taking an interest in the advancement of art, and by none more strongly than by this Council, that, in the act for legalising Art-Unions, the conditions on which such an association should be permitted to be formed were too lax, and that sufficient power was not vested in the Board of Trade to prevent the fraudulent proceedings of some who sheltered themselves under the name of Art-Unions.

A committee of the House of Commons was appointed, with Lord Robert Montague as chairman, which examined ten witnesses, and made a report recommending that the administration and enforcement of the Art-Union Laws should be placed under the charge of the Science and Art Department of the Privy Council, and that a code of regulations should be adopted, which were, in nearly every particular, identical with the regulations of this Society. The Council had every reason to be satisfied with the mass of evidence which came out, proving beyond controversy the value and importance of their operations; and even those most hostile to us admitted the excellence of its management, and called it the model Art-Union.

Unfortunately, in consequence of the pressure of business in the House of Commons, the matter went no further than the presentation of the report, and an act based on its recommendations is still a desideratum.

At the International Exhibition in Paris, in 1867, some of the Society's prints and bronze statuettes were exhibited.

In the same year the Council offered a premium of 200 guineas, with 100 added if the result proved very satisfactory, for a set of drawings illustrating some poetical or historical work of a British author, or events in British history. Thirty-five sets of designs were received, and the premium was awarded to a series illustrating Canon Kingsley's story of "Hereward the Wake," which was found to be the production of Mr. H. C. Selous, who had on two former occasions carried off premiums offered by the Society. The drawings were engraved by Mr. Charles Lewis, and formed the presentation work for the year 1870.

At the International Exhibition at South Kensington, last year, the marble statue of the "Wood Nymph," occupied a conspicuous position. A very effective collection of our bronzes was also contributed, together with two cameos beautifully cut by Mr. Ronca, of "St. George" and "Ariel." These will be given as prizes in to-day's distribution.

A similar contribution has been made to the exhibition, to be opened to-morrow.

Such is a brief recital of the progress of the Art-Union. It has had its varied fortunes, but has pursued steadily its path of duty under circumstances at times very critical and difficult to meet. Its present position proves that it has triumphed over all.

If the Association has fostered native talent and assisted rising artists,—cultivated and diffused a love and taste for art through every class, and raised the standard of ornament to be found both in the cottage of the peasant and the palace of the affluent,—the Council feel that much has been accomplished, and every effort will be made year after year to cherish the love of the beautiful, and implant a sound judgment in the humblest and in the noblest of the empire.

It must be a work of time and labour to imbue with a feeling for art the great bulk of a mercantile community, where the return in pounds, shillings, and pence does not lie on the surface. In the short spaces of relaxation obtainable by those pressing forward in the battle of life, there are so many and such exciting objects of pursuit that art must be content to take such a position only as its unobtrusive and refined nature may be able to gain. It

is only by degrees that its votaries can be taught to feel the exquisite enjoyment which its full appreciation is capable of conferring.

LEWIS POCOCK,
EDWARD E. ANTROBUS, } Hon. Secs.

The Chairman, after alluding to the interesting sketch of the progress of the Society which had just been read, paid a tribute to the memory of the late Professor Westmacott, who, notwithstanding his advanced age, had been so vigorous, that his decease had come upon his friends with the shock of a surprise. He had been identified with the interests of British art; and, if he had not been so prolific as some, his memory would remain among British artists with a fame singularly pure, and as one whose works were characterised by extreme grace and elegance. Alluding to British art, Lord Houghton said he understood that the exhibition of the Royal Academy now about to be opened was extremely rich in *tableaux de genre*, and if these were not of the highest class of art, they were at least the most popular. Alluding to the wonderful sale of the collection of Mr. Gillott, he said it showed how good a thing it was to invest money with judgment in pictures. It might, however, be well to consider whether these immense prices of works of art were really very beneficial. An artist whose pictures fetched such large sums could not fail to experience a feeling of some hardness from learning that others were reaping the largest fruits of some of his hardest labour. However, there was reason to believe that, notwithstanding the large amount of money concentrated on these pictures, there was still enough left to go into the pockets of the artists of to-day. In the encouragement of rising art this Society was of great value, and what a prizeholder might select with judgment would be not only a lasting pleasure to himself, but might prove a good investment for his children. He would recommend prizeholders to look out for young artists, and for such as displayed genius; not to object to buying a picture with an unknown name, for there was not one of the greatest painters who had not been once unknown. He recollected when he had been in Parliament that in going round to canvass he had always met some good-natured people who kindly wished all the candidates to succeed, and now he could only follow their example, and hope that all present might get prizes, though there might be some physical difficulties in the way of this. He concluded by moving the adoption of the report.

Sir Walter Stirling seconded the resolution, and said he thought that the enormous prices which had recently been obtained for pictures might be in some degree attributed to the love and appreciation of art which had been fostered by this institution. Sir Walter made some strong observations condemnatory of the removal of Carlton House and Burlington House, and on the anticipated pulling down of Temple Bar.

The report was adopted.

Mr. F. Bennoch moved a vote of thanks to Messrs. Lewis Pocock and Edmund E. Antrobus, the secretaries, remarking that to the everlasting care of the past and present hon. secretaries the great success of the Association must be mainly attributed. He said that some time since a gentleman surveying a wild portion of Australia had met in a house far from any large settlement a series of the Art-Union pictures.

Mr. Butterworth seconded the resolution, which was agreed to.

Mr. L. Pocock returned thanks to the meeting, and moved a vote of thanks to Mr. B. Webster for his kindness in granting the use of the theatre, and to Mr. Kinloch for his assistance.

Mr. E. Antrobus seconded the resolution, and spoke in acknowledgment of the vote of thanks to the hon. secretaries.

The resolution having been passed, Miss Ingram and Miss Peregrine proceeded to draw the prizes, the principal of which were allotted as follows:—

200*l.*—Haylock, T., Lower Wandsworth-road.
150*l.*—Lutt, Ed., New-cross; Rhodes, J., Leeds.
100*l.*—Morris, C. K., Oakham; Slee, G., Bermondsey; Steuart, W., Hill-street.
75*l.*—Ashurst, H. G., Richmond; Milsom, J., Canterbury, New Zealand.
60*l.*—Fraser, J., Camden-road; Hudson, W. G., Plumstead; Newman, R., Hobart Town; Val, S., Coventry.
50*l.*—Bisshopp, J., Wimbledon; Phillips, J., South Hackney; Saunders, J., Kidderminster; Shepard, C. P., Boston, United States.
45*l.*—Ferguson, Col. G., Pitfour, N.B.; Crickmay, W., Caterham; Salmon, G. P., Distaff-lane; Shaw, T., jun., Camperdown, Victoria; Warren, —, Northampton; Woodward, C. H., Croydon.
40*l.*—Boswell, C. S., Redditch; Coleridge, Rev. E., Mapledurham; Harper, J., Newcastle-on-Tyne; King, W. M., Q.-M.-G. Off., Pall-mall; Marsland, N., Falmouth-road; Stevens, J. C. M., Winscott; Taylor, W., Maidstone; Wilson, W. F. A., Maida-hill.
35*l.*—Bishop, M. J., Paternoster-row; Blackstone, W. W., St. Augustine's-road; Butler, C., 141, Drury-lane; Cross, Rev. E. H., Canterbury; Hannaford, W., St. John's Wood-park; Nicholson, Master F., Sunderland; Noseworthy, F., Tavistock; Smith, J. F., Camden-road; Stuart, J. C., Customs; Sumner, Rev. J. H. R., Ellesborough, Tring.
30*l.*—Else, A. C. Matlock-bridge; Bertemati, Don José, Jerez de la Frontera; Ferguson, W., Stock Exchange; Fulcher, G. F., Burbage, Marlborough; Harvey, C., Kidderminster; M'Kenzie, R., Brewery, Soho; Payton, J. P., Bedford; Prowse, W., Hornsey; Richardson, J., Barcelona; Wade, G., Sheffield.
25*l.*—Allcock, D., Waterloo; Browne, R. P., Greenwich; Couldery, H., Lewisham; Guard, C. M., Bermondsey; Howis, C., Brentford; Hodgson, R. J., Gray's-inn-road; Hutchinson, R. W., Hartlepool; Littlecott, Rev., Rushall; Manger, J. W., York, Australia; Sherwin, S., Boston, England; Tate, F., Godalming; Ward, A., Locumba, Peru.
20*l.*—Barber, S., Old Ford; Brown, T., 69, St. Paul's Churchyard; F. H., per H. C., Pidgeon; Garwood, R. B., Arundel; Hallifax, Miss, Chadacre Hall; H. E.; Long, C. G., Maidstone; Lumsden, D., Port Elizabeth; Macleod, G., St. John, New Brunswick; Myhill, H., Saffron Walden; Rawle, J. S., Nottingham; Seaton, P., Selby; Webster, Mrs., Hulme, Manchester.
15*l.*—Adams, Sam., Ware; Aplin, B. W., Banbury; Bewes, C., Plymouth; Bird, Wlr., Rugby; Braikenridge, G. J., Enfield; Copeland, J., Hanley; Dendeum, —, Vienna; Ellis, J. S., South Hackney; Flemming, Miss, Acacia-road; Frost, W., Princes-gardens; Greenhalgh, E., Bolton; Harley, E., Saffron Walden; Keenan, J., Bramley; Portway, S. G., Lincoln's-inn-fields; Roberson, C., Long-acre; Rogers, J. C., Blackford; Spencer, A. J., Harrow-road; Wells, G., 12, North-street, Westminster; Williams, Mrs. C. M., Cardiff; Wright, W., Preston Brook.
10*l.*—Adams, M., Two Wells; Angus, Dr., Regent's Park; Ashdown, E., Hanover-square; Buckley, H., Manchester; Butson, J., Moonta; Dykes, E. O., Leeds; Esse, A. F., City-road; Fawcett, N. C., Kapunda; Fernandez, Don, Cadiz; Gilbert, T., High Wycombe; Herne, H., Birmingham; Hope, J., Clare, South Australia; Hirstfield, J., Bolton; Jackson, Mrs. H. D., West Brompton; Lobley, J., Hanley; M'Knight, G., Wellington, Salop; Mason, H., Maidstone; Oates, J. H., Leeds; Poole, W. F., Paddington; Rutt, T. P., Barnsbury; Vero, C., Atherstone; Watson, W. W., Glasgow.

Entitled to the marble group "A Wood Nymph."—Hornsby, E., 25, Old Change.

Bronze Vase.—Alexander, J., Borough; Bolton, J., jun., Sussex Hotel; Cairncross, J., Mossel Bay; Choisy, J. J., George-yard; Dally, G., San Francisco; Dunscombe, J., Cork; Evesoe, J. G., Stourbridge; Ford, W. J., Maida-vale; Frances, Col., Hull; Gernherdt, F. E., Mawn City; Grant, Miss, Belfast, Victoria; Harris, G., Covent-garden; Herson, J., Peckham-rye; Jolland, C. J., Newington-butts; Lees, W., Ashton-under-Lyne; Lowson, A., Arbroath; Martin, E., Bruton-street; Mitchelson, J., Pickering; Moody, J. B., Yarmouth, Nova Scotia; Ness, J., Helmsley; Nicholson, W. L., Landor-terrace; Paxton, W., Little Gaddesden; Reid, P., Dundee; Scott, 34, Great Marlborough-street; Shirer, J. F., Cheltenham; Taylor, J., Stalybridge; Turner, J., Pimlico; Wilcox, S., Lamb's Conduit-street; Wood, J. C., Church, Accrington; Wright, W., Preston Brook.

A Bronze Copy of "The Nelson Monument."—Coore, H., Bedale; Davies, H. P., Seaford; Fotheringham, T., Gawler; Jackson, W., Garton; Knowles, H., Salford; Parry, Mrs. C. J., Torpoint; Rawlins, J., Newman-street; Webster, S. M., Warrington.

A Cameo "St. George."—Burton, W., 171, Avenue-park.

A Cameo "Ariel."—Chapman, C. W., Victoria-street, Hackney.

A Bronze Inkstand.—Allum, F. E., Craven-street; Matthews, F. B., Montreal.

THE PASSAGE BETWEEN ENGLAND AND FRANCE.

CAPTAIN WILLIAM DICEY, of Walmer, who has long given attention to the possibility of lessening the inconveniences at present attending the transit between the two countries, has devised a vessel which he thinks will obviate to a very great extent the present inconveniences of the sea journey between the English and French ports.

The principal difficulties to surmount are the rolling and pitching of the vessel, and the deficiency of accommodation on deck for passengers, and the object is to surmount these difficulties, if possible, consistently with not increasing the draught of the vessels, and in not rendering them crank or unseaworthy, and also in not diminishing the speed at which the present vessels travel.

Captain Dicey says:—It is well known that the operation of a supported heavy weight parallel to and at a distance from a floating body, will have a tendency to steady such floating body, causing it to be less sensible to the movements of the waves. This fact has suggested to me the invention of which I speak. Instead, however, of affixing a useless and dead weight at a distance from the original vessel, I convert such weight into a hull similar in all respects to the hull upon which it is to act, so that instead of a vessel consisting of a single hull, as now constructed, I have two distinct hulls parallel to and at a considerable distance from each other. By means of the girder principle, which has been found so efficacious in the construction of iron bridges, I connect these two hulls together, and thereby produce the result that each hull acts upon the other, so that any movement which would be caused to one hull by the force of the waves is counteracted by the opposite hull, and the entire vessel remains comparatively unaffected by the motion of the waves. The vessel will consist of two hulls parallel to each other, each being 400 ft. long, 20 ft. beam, and 20 ft. depth of hold, secured together by means of girders, at a distance of 35 ft. apart, with the propelling paddles working between the two hulls. Each hull will be very sharp at each end, and flat in the floor. Estimating the draught of water at 6 ft., these dimensions will give a clear side out of the water between the two vessels of 14 ft., and will admit of girders of this depth of a slightly arched form being placed between the two hulls—the upper part under the deck, the lower part just above the water-line. The dimensions will admit of a deck 60 ft. wide and 200 ft. in length, and this would admit of saloons, cabins, and every accommodation and convenience being constructed above the deck for the comfort of passengers, without the inconvenience of the confined cabins in the vessels as now constructed; in addition, there will be a space round for the working of the vessel."

Captain Dicey has had long experience in the East Indian marine service, and is entitled to speak. We commend his design to the attention of those who are in a position to aid in testing it.

PROPOSED NEW SCHOOLS, JOHNSON STREET, STEPNEY.

THE designs for these schools, submitted in competition to the London School-Board, have been exhibited at the Guildhall, to such architects as happened to hear of the opportunity. It occurred too late, however, to enable us now to say anything about the drawings. The designs are by Mr. Roger Smith; Messrs. A. & C. Harston; Mr. H. Saxon Snell (6,500*l.*); Messrs. Jarvis & Son (10,200*l.*); and Mr. Basil Champneys.

THE ROYAL ACADEMY.

ALTHOUGH the periodical press was courteously admitted to a quiet view of the 104th Exhibition of the Royal Academy of Arts in time to enable us to review it in our present number, it was with the express condition that no account of the exhibition should be published till after the day of the private view, this, Friday, May 3rd. We are forced, therefore, to postpone criticism till next week. We may say, however, that it is an interesting collection (consisting of 1,583 works of art, in the whole), and includes a number of pictures of very high merit. Mr. Elmore, Mr. E. M. Ward, Mrs. Ward, Mr. Frith, Mr. Millais, Mr. E. Long, Sir J. Gilbert, Mr. Richmond, Mr. Wells, Mr. Watts, Mr. Mason, Mr. G. Leslie, Mr. F. Leighton, Mr. Calderon, Mr. F. Walker, Mr. James Sant, Mr. Hook, Mr. Cope, Mr. Mann, Mr. Armitage, Mr. G. Smith, Mr. J. F. Lewis, Mr. Poynter, Mr. J. P. Knight, and Mr. P. Graham, with some others, are all worthily represented,—Sir Edwin Landseer largely. The architectural drawings and designs are about 100 in number, and will have attention in our next.

COMPETITIONS.

St. Helen's New Town-hall.—A special meeting of the St. Helen's Town Council has been held. The Council considered the report of Mr. Waterhouse, architect, on the plans for the new town-hall and the final selection of a design. Out of the six competing architects Mr. Waterhouse chose three, who contributed four plans, and he finally recommended one bearing the motto—*Respice Finem.* The meeting now accepted his judgment by ten to nine votes, and on the letters being opened it was found that the successful design had come from Messrs. Culshaw & Sumner, Liverpool. It was decided to ask Mr. Culshaw to meet the committee immediately, as alterations will be necessary.

Newington Mission Church.—The committee have decided to award the first premium to Mr. Cutts; the second to Mr. John Giles; and the third to Messrs. Giles & Gane.

Gateshead.—The congregation of the United Presbyterian Church in Gateshead, finding their present place of meeting too small, have resolved upon the erection of a new church in Bewick-road, and out of three designs for the building